SUBMISSION

to the

ROYAL COMMISSION ON COAL

by

The New Brunswick Coal Producers' Association

Fredericton, N. B.
February 16, 1945

S U B M I S S I O N

To The

ROYAL COMMISSION ON COAL

By

THE NEW BRUNSWICK COAL PRODUCERS' ASSOCIATION

Avon Coal Co.
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FREDERICTON, N. B.

Feb. 16, 1945.

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In common with other coal producing areas, the New Brunswick coal field has been faced with a serious economic problem over a long period of years. This submission attempts to indicate the nature of the basic economic problems, some of which parallel those of other coal areas, while others are peculiar to New Brunswick. Specific proposals are then made, embodying what the New Brunswick Coal Producers' Association believes to be the steps necessary to place the New Brunswick coal industry on a sound economic basis.

A. THE COAL AREA.

Bituminous coal has been mined in New Brunswick over a longer period, perhaps,than in any other part of North America. The Minto field was referred to by Samuel Pepys in his Diary, September 5, 1667, and coal was exported from Grand Lake to Boston during the 17th Century.

The Minto coal basin covers an area of some 400 square miles near the head of Grand Lake in Queens and Sunbury Counties. The known coal reserves cover an area of approximately 147 square miles. Minto, the centre of the mining district, is 35 miles east of Fredericton on a branch of the Canadian Pacific Railway. It is also connected with the Transcontinental main line of the Canadian National Railways by a short branch to Hardwood Ridge Station, serving the northern part of the field, and it is connected with Chipman by the C. P. R. (See Map, Exhibit A). Chipman is the only other important population centre in the coal area. It is served by three railway connections--the Transcontinental line of the C. N. R.; the C. P. R. branch to Fredericton; and a C. P. R. branch to Norton, on the main line of the C. N. R. between Saint John and Moncton.

B. ECONOMIC IMPORTANCE OF THE INDUSTRY.

While coal mining is not one of New Brunswick's major industries, it represents an important segment of the provincial economy, and dominates the regional economy of the coal basin area. From 1930 to 1942 the value of coal production ranged from 1.2 to 2.2 per cent. of the net value of the total production of all commodities in the province. In 1939, which may be considered to be a normal year, coal output accounted for 2.1 per cent. of the value of all goods produced in New Brunswick. (See Table 1, Appendix)

From 1933 to 1942 the coal industry employed an average of 1,157 persons, and in this period the average level of employment never fell below 1,025 (see Table 2). In 1939, the last year before the war, when conditions were normal and production and sales were firm, 1,284 persons were employed. In 1940 employment increased to 1,406. This has since fallen off because of the manpower shortage, and in 1943 only 915 persons were employed.

The total number of days worked per year ranged from a low of 235,392 in 1938 (a strike year), to a high of 385,677 days in 1940, the all-time record year of production. Employment in the Minto field has tended to be steadier than in Nova Scotia, as shown in the following figures:

Average Number of Days Worked Per Man Year
in New Brunswick and Nova Scotia

Year	N. B.	N. S.	N.B. over N.S.
1931	196	182	+ 14
1932	219	155	+ 64
1933	250	170	+ 80
1934	229	233	- 4
1935	231	217	+ 14
1936	232	227	+ 5
1937	244[1]	247	- 3
1938	210[1]	204	+ 6
1939	257	231	+ 26
1940	274	263	+ 11
1941	267	279	- 12
1942	262	276	- 14

1. Strike loss = 90 days in 1937 - 38.

Over the twelve years examined, the average number of days worked per man year in New Brunswick was 239, as against 224 in Nova Scotia. In only four of these years was the Nova Scotia average higher than that of New Brunswick, and in only one of those years (1939) was it substantially higher. On the other hand, during the worst depression years of 1932 and 1933, New Brunswick miners averaged from 10 to 13 weeks more work than the miners in Nova Scotia. This, of course, resulted in higher earnings in New Brunswick as work increased, and it reversed the previous position of average annual earnings in the two provinces. In 1932 average annual wages in New Brunswick were $716 as against $790 in Nova Scotia; but in 1933 the New Brunswick figure was $840, compared with $730 in Nova Scotia. Furthermore employment increased steadily in the New Brunswick industry from 1931 up until the strike in 1937, while it fell sharply in Nova Scotia from 1931 to 1933, and did not recover its 1931 level until 1938.

The payroll of the New Brunswick coal industry during the period 1933 - 1942 ranged from a low of $678,844 in 1934, to a high of $1,251,207 in 1941 (Table 2). In the pre-war period these wage payments provided from 1.1 to 1.6 per cent. of the total salaries and wages received in New Brunswick by all employees of every kind (see Table 3). The relative importance of the industry's payroll in the production economy of New Brunswick is indicated in Table 4.

In 1941 the coal mining payroll was greater than that of any major group of manufacturing industries except the pulp and paper mills and sawmills, which are New Brunswick's most important secondary industries. In terms of average pay per worker, the coal industry paid more than six of these key industries, less than five. The coal industry's average was 43 per cent. less than the highest pay group (pulp and paper) and 61 per cent. greater than the lowest (fish packing).

The importance of a million dollar payroll, concentrated in a community the size of the coal area, is obvious. In 1941 the population of the Parishes of Canning and Chipman in Queens County, and Northfield in Sunbury County, which are for the most part in the coal area, was 8,308, not to mention Sheffield and Waterborough, part of which lie in the coal area. The economic welfare of some 6,000 persons is directly dependent upon the coal industry. Furthermore, the purchasing power represented by the industry's payroll is of considerable importance to the economy of Fredericton, Saint John and Moncton, which are shopping centres for the coal community. Thus the industry is of vital importance to a relatively large number of people over a wide area.

The Minto coal field is of critical importance in the production of electric energy in New Brunswick. The most important generating station of the New Brunswick Electric Power Commission is located at the coal field, and uses Minto coal exclusively for steam power. In 1941 this plant produced 82 per cent. of the 86,310,000 K.W.H. generated by the Power Commission,[1] and accounted for 13 per cent. of the 533,074,000 K.W.H. generated by all electric stations in the province.[2] More consumers of electricity in New Brunswick are dependent upon power generated from Minto coal than from any other source. The amount of Minto coal consumed in the Grand Lake Power plant has increased steadily from 18,056 tons in 1932, to 80,311 tons in 1944.

The Provincial Government benefits directly from the coal industry through royalties on production which ranged normally in the pre-war period from $35,000 to $45,000 per annum. In 1940 the total royalty receipts from coal amounted to $50,161. Additional revenues are received by the province through personal taxation which is based ultimately, of course, upon taxpayers' income. The mining industry's payroll must contribute substantially to the provincial tax revenues.

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1. Annual Report of the N. B. Electric Power Commission, 1941.

2. Central Electric Stations in Canada, 1941, Dominion Bureau of Statistics.

It should hardly be necessary to point out the importance of the industry to national defence. But it is a fact which is often overlooked. Without the Maritime coal industry the whole of eastern Canada would be dependent upon external and uncertain sources of supply for the one commodity upon which our whole armament program and railway transportation system are based. Furthermore, the Minto field is located inland and is therefore less vulnerable to enemy attack than other eastern coalfields; it is not only closer to consuming industries in New Brunswick, but is closer than any other field to the Quebec consumers. This situation alone provides an adequate case for the maintenance of the industry as an element of national policy.

C. THE ECONOMIC PROBLEM.

1. Nature of the Coal.

All of the coal mined from the Minto field is from a blanket or flat seam. An underlying seam is found in a few places, but it is of no economic importance. The seam lies in low and irregular folds, and is found in most parts of the coal basin. It is covered by shale or sandstone which forms the roof of the mines. It is underlaid by hard massive shale, and in some cases sandstone, below which there is a fairly compact shale.

Over large areas the seam lies comparatively near the surface, while in some parts of the field it has been mined at depths of 135 feet. Drillings indicate coal at depths to 180 feet. The seam is thickest in the North Minto section, where it averages from 22 to 24 inches. It carries a clay band, the position of which varies in different localities. In some mines it lies under from 4 to 6 inches of top coal and over 17 to 20 inches of bottom coal, while the position is reversed in other mines. Two mines have from 18 to 30 inches of clay overlying 18 inches of coal. When this thin seam in New Brunswick is compared, for example, with the 9 foot Number Two Seam at Springhill, N. S., covered by 3,800 feet of vertical overburden, it will be apparent that there are different mining problems in the two districts.

Generally speaking, Minto coals are well banded bituminous coals, with a predominance of bright coal. There is an appreciable quantity of visible pyrite. The ash and sulphur contents of the coal are comparatively high, with run-of-mine ash ranging from 15 to 19 per cent., and sulphur from 5.5 to 7.7 per cent. Volatile matter is relatively high. Typical analyses of coal as mined by the principal collieries are as follows:

Proximate Analysis (Dry Basis)

Mining Company	Ash	Volatile Matter	Fixed Carbon	Sulphur	B.T.U. per b.	Fusion Point of Ash
	%	%	%	%		°F
Minto[1]						
A	16.2	31.3	52.5	6.9	12,760	1,950
B	14.9	30.7	54.4	5.8	12,840	1,982
C	16.9	31.3	51.8	6.7	- -	2,000
D	13.1	33.4	53.5	6.0	13,230	1,975
E	15.3	31.3	53.4	7.7	12,850	2,010
F	15.6	31.3	53.3	6.1	- -	- -
G	12.0	36.2	51.8	6.6	13,440	- -
Nova Scotia						
Dominion	8-9	33-35	55-58	2.5-3	13,850	2,050-2,150
Fairmont	8	37	53	2	13,900	2,050-2,150

1. Source: E. J. Burrough, R. A. Strong and E. Swartzman, "Washing and Coking Study of Coals from the Minto Coal Basin, New Brunswick", R.I.C.S. No. 48, Bureau of Mines, Ottawa, p. 4.

Even though the coal is of comparatively high rank, its heating value is relatively low because of the high percentage of impurities. Its calorific value ranges from a low of 11,500 B.T.U. per pound for screenings, to 13,400 B.T.U. for lump coal, compared with Nova Scotia's Dominion and Fairmont coals, which average 13,850 and 13,900 B.T.U. respectively. First grade (7% ash) American bituminous averages about 14,000 B.T.U. per pound, and second grade (10% ash) American, which runs about 13,000 B.T.U.

The physical characteristics of this coal are not particularly good. It is highly fractured and therefore breaks down readily on handling during mining, preparation, loading and shipment. This results in the production of a large quantity of slack. It is estimated that mining and simple preparation result on the average in the production of mine run coal containing about 66 per cent. of $1\frac{1}{2}$ inch slack. This, along with the high sulphur content, results in a coal which is rather difficult to store without danger of spontaneous combustion.

Because of its chemical and physical properties, Minto coal in an unprocessed state has not been regarded as a good domestic fuel.[1] But screened lump is a good steam or locomotive coal. These factors have important bearing on the economic problem of marketing, which will be developed under that section of the submission.

2. Coal Reserves.

In 1923 W. S. Dyer, a member of the Dominion Geological Survey Staff, estimated that the total of all coal reserves attributable to the Minto coal seam amounted to 235,200,000 tons.[2] This estimate includes three categories of coal, "actual", "probable", and "possible". Actual coal "is used to mean a quantity of coal that is certainly known to be present within a given area". It was estimated that the actual coal reserves, covering an area of 4.3 square miles, amounted to 8,200,000 tons.

Probable coal is used to mean "coal that has been tested at the outcrop, or that has been discerned in diamond drilling in areas that have not been systematically prospected by this means, or that is likely to occur in a basin beyond the limits of the areas of coal classified as actual". Probable coal was estimated at 61,000,000 tons, over an area of some 40 square miles.

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1. A new type of heating unit has been developed which may change this situation. This point will be discussed under "Marketing".

2. "Minto Coal Basin, New Brunswick", Memoir 151, Geological Survey, Department of Mines, Ottawa, pp. 26 - 27.

Possible coal "applies to areas where the coal is known to occur, but only as isolated outcrops or from occurrences in one or two bore-holes, or where insufficient prospecting has been done to raise the coal into the probable class". Dyer estimated the reserve of possible coal at 166,000,000 tons, over an area of about 105 square miles.

Over 9,000,000 tons of coal have been taken out of the seam since 1887, and over 6,000,000 tons since Dyer's estimate was made. Meanwhile a substantial quantity of reserves has been moved from the probable category to actual coal reserves.

A current estimate of probable and possible reserves made by the Provincial Geologist indicates 70,000,000 tons of probable coal, and 9,000,000 tons of coal classified as possible. No official current estimate of actual reserves is available. The New Brunswick Coal Producers' Association estimates that the actual reserves amount to some 25,000,000 tons. At an optimum annual output of 500,000 tons, which we believe should be normal, these reserves would give the mines another fifty years of operation.

A comprehensive drilling program is required in the whole field before coal reserves can be estimated accurately, and it is recommended that the Dominion Government carry out such a program. Up to this time the operators have done practically all of the drilling, and have spent in the vicinity of $200,000 on it.

3. Capital Investment.

The capital employed in the Minto mining operations is relatively small, averaging $1,299,000 in the period 1936 - 1942 (Table 5). This is accounted for by the fact that the seam lies so close to the surface. Unlike Nova Scotia, there is no deep shaft mining in the Minto field, involving heavy capital expenditure. In New Brunswick it has in most cases been more economical to sink shafts frequently and to move surface equipment to the new shafts as an area is worked out, rather than employ extensive underground development.

In recent years, because of deeper shafts, greater capital expenditures have been and will be required, as greater tonnage is taken from a single opening.

The low capital investment does not mean that mining machinery has not been used. Since 1932 all of the mines represented in this Association have been electrified (after the construction of the power plant at Grand Lake), in order that every advantage could be taken of mechanical equipment.

Various operators have been experimenting with different types of machinery for a number of years. Mechanisation is difficult, however, because of the varying conditions found within a mine as it is worked. Equipment which is effective in one part of the seam may be quite unsuitable in another. It appears inevitable that heavier capital outlays must be made in the future. Deeper shafts must be sunk to smaller seams, involving more high head pumping, larger ventilation fans, and longer haulage systems, which will necessitate an increase in capital investment.

In terms of fixed capital employed per ton of coal produced, the Minto mines have employed much less capital than any other mining area in Canada (see Table 6). In 1939 the Minto operators used an average fixed investment of $1.66 per ton of coal produced, compared with $4.71 in Nova Scotia, $3.90 in Saskatchewan, $5.40 in Alberta and $11.51 in British Columbia.

4. Nature of the Mining Operation.

Coal is mined in the Minto area by both shaft and stripping operations. The shaft operation is by far the more important, and since 1939 has accounted for 72 to 85 per cent. of the total output (see Table 9). In the early days of mining all of it was done by hand pick work at shallow depths, by the Room and Pillar Method. A small shaft was sunk and main entries were driven from it. Other entries were set off from these at right angles, and then others driven off from these, dividing the area into squares. Entry rooms were sectioned off at right angles to work out the square block of coal. These "rooms" were some 15 feet wide, separated by a 15 foot pillar. The separating pillars were worked out by the miners, thereby accounting for almost complete extraction.

In view of the fact that the coal seam is so thin, it is obvious that even for a relatively small output the area of a mine worked in this way would have to be rather extensive. In order to avoid long and expensive underground transportation systems the area mined out from one shaft tended to be rather small. It was cheaper to sink new shafts to operate areas contiguous to old workings. These areas seldom exceeded 700 feet in any direction from the shaft, and ordinarily covered a maximum area of 10 acres, containing normally about 30,000 tons of coal. Thus a new operation was begun for about roughly every 10,000 to 30,000 tons of coal produced. The operation was simple, and since it involved little machinery, the capital cost of opening new mines was low. This old system of mining is still in use in the smaller mines in the district where the seam lies near the outcrop.

Since these earlier days shafts and slopes have been sunk to develop extensive areas underground, increasing the production from a single shaft or slope up to 1,000,000 tons. These larger operations have involved for the most part longwall advancing or retreating methods, with mechanical conveyors used for transporting the coal along the face, discharging it into mine cars which are moved by underground haulage to the bottom of the shaft or slope.

Shortwall and stall systems have also been used, employing machines especially designed and constructed by leading mining machinery producers for the peculiar mining conditions at Minto. It must be stressed that the use of a particular type of mining machine presupposes the continuance of the conditions which it was designed to meet. This has not by any means been usual in Minto, and consequently the operators must improvise to meet changing conditions as they develop while working a particular area.

Open pit stripping has been used more or less continuously over a good many years. The low overburden areas have, however, been considerably depleted, and stripping is now being carried on where overburdens up to 35 feet are lifted. Draglines are used for all depths over 15 feet, and 3½ and 6 yard buckets are used. The ratio of dirt moved varies from 15 to 20 yards per ton of coal. Generally

speaking, the ground lends itself rather well to stripping operations, but difficulty has at times been encountered in the form of a heavy sandstone band. The climate is also a disadvantage to surface operations. Production falls when the ground is frozen, and particularly during periods of winter storms. This, of course, is the period when demand is highest.

5. Production.

The output of coal from the Minto field has increased from an average of 6,235 tons per year during the period 1889 - 1893, to a maximum of 547,064 tons in 1940 (see Table 7). The two great wars, causing a national fuel emergency, provided a strong impetus to coal production in Canada, which was shared by the New Brunswick industry. Average production from 1914 - 1918 was increased by 111,186 tons (200 per cent.) over the average for 1909 - 1913. In 1918, the peak of war-time production, output was 281 per cent. greater than in 1913, which had represented an all-time high. Although production levelled off after the war, it never again fell to its pre-war position. During the next decade it fluctuated from a low of 166,377 tons in 1919 to a high of 287,513 tons in 1922.

While production fell off somewhat during the first two years of the depression, the output in 1931, lowest year since 1926, was not seriously out of line with average output in the twenties (182,181 tons in 1931, compared with an average of 215,157 for the period 1920 - 1929). From 1931 production increased steadily and sharply until interrupted in 1937 and 1938 by a strike. This was largely the result of increased consumption of coal in New Brunswick by the railways, the pulp and paper industry, and the New Brunswick Electric Power Commission. This resistance to depression is in sharp contrast with the situation in Nova Scotia, as shown in the following figures:

Index Numbers of Coal Production in
New Brunswick and Nova Scotia,
1929 - 1935.

Year	1929 = 100 N. B.	N. S.
1929	100	100
1930	95	89
1931	83	70
1932	97	58
1933	142	64
1934	144	90
1935	158	82

The 1939 output in New Brunswick for the first time exceeded 400,000 tons, and was 75 per cent. greater than that of 1918, the peak production year of the last war. Had it not been for the strike in 1937 - 38, production in those years undoubtedly would have exceeded 400,000 tons. The impact of another war has again increased output to all-time records. In 1940 production reached 547,064 tons. Thereafter it has fallen off because of labour shortage.

Compared with the trend in Nova Scotia, there has been a much greater relative increase in coal production in New Brunswick since the last war, and production has not suffered such serious cut-backs in depression years. New Brunswick production since 1919 has never fallen to the level of that year (see Chart 1).

Monthly production figures for New Brunswick during the period 1935 to 1944 are shown in Table 8 and Chart 2. The lowest production in this period was 12,172 tons in November, 1937 (during a strike); the high point was 52,017 tons in October, 1940. There is a marked pattern of seasonal variation in output, and there was a considerable spread from low to high, particularly prior to 1939. The following recapitulation of the figures indicates the high-low points during the period.

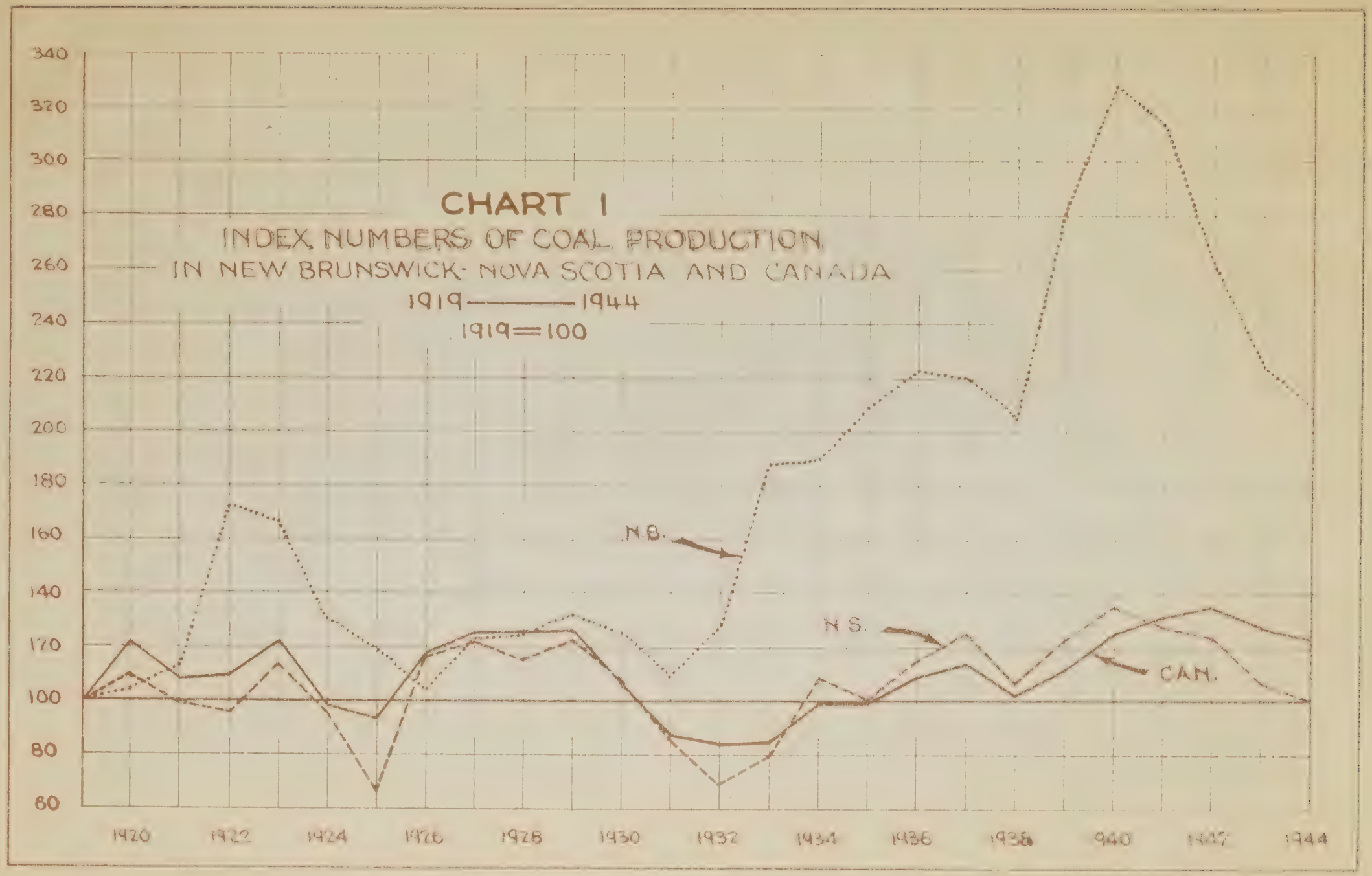
CHART I
INDEX NUMBERS OF COAL PRODUCTION
IN NEW BRUNSWICK- NOVA SCOTIA AND CANADA
1919 —— 1944
1919=100
N.B.
N.S.
CAN.
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
1920
1922
1924
1926
1928
1930
1932
1934
1936
1938
1940
1942
1944

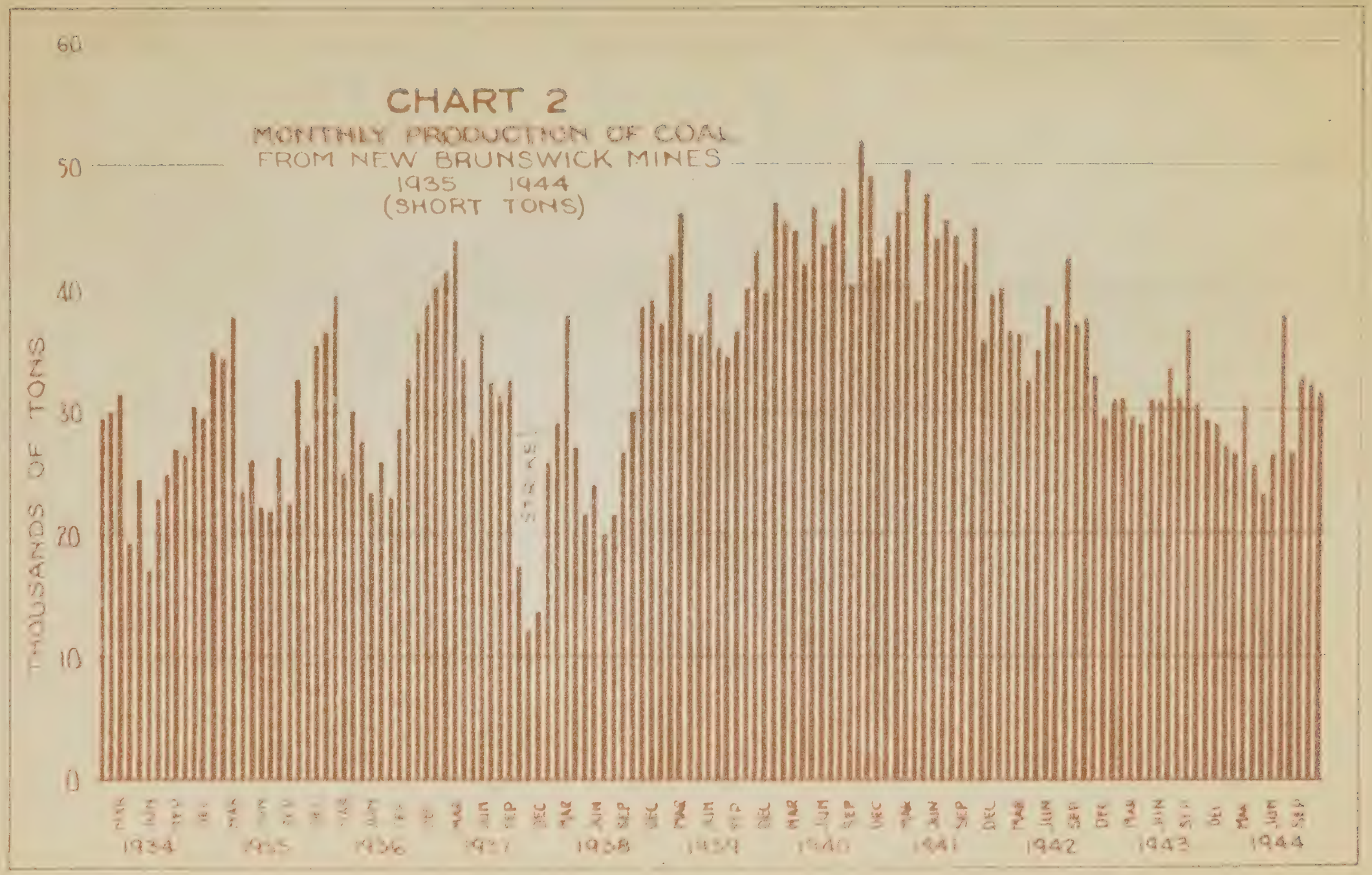
CHART 2
MONTHLY PRODUCTION OF COAL
FROM NEW BRUNSWICK MINES
1935 1944
(SHORT TONS)
THOUSANDS OF TONS
60
50
40
30
20
10
0
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944

Maximum-Minimum Monthly Coal Output Data
in N. B., 1935 - 1944

Year	Maximum		Minimum		Ratio of Low to High
	Month	Output	Month	Output	
1935	Mar.	37,805 tons	July	22,069 tons	58%
1936	Feb.	39,476	Aug.	22,981	56
1937	Mar.	44,070	Nov.	12,172 (strike)	27
1938	Dec.	38,968	July	20,056	51
1939	Mar.	46,164	Aug.	34,523	76
1940	Oct.	52,017	Sept.	40,361	77
1941	Mar.	49,662	Nov.	35,672	72
1942	Aug.	42,440	Dec.	29,634	71
1943	Sept.	36,791	Dec.	29,006	78
1944	July	37,836	May	23,187	60

Normally the greatest output has been produced during the first quarter, while production fell to its lowest point during the third quarter. War conditions have changed this pattern entirely, due to the increase in stripping. During the past three years (1942 - 44) the greatest output was secured in the third quarter. In 1942 and 1943 the lowest production took place in December, a month which previously had stood high in output.

The better demand for Minto coal in recent years has resulted in more stability in monthly production, narrowing the gap between the highest and lowest months. Prior to 1939 lowest monthly output ranged (exclusive of 1937, a strike year) from 51 to 58 per cent. of the maximum output. Between 1939 and 1943 it ranged from 71 to 78 per cent., although the ratio fell off to 60 per cent. in 1944. It is the hope of the New Brunswick operators that conditions in the future will enable the industry to maintain production on a relatively stable basis throughout the year, since this will benefit the workers substantially.

Prior to the war stripping accounted for only a small part of the total coal output in New Brunswick, although the relative increase in stripping output was somewhat greater than the increase in shaft production (see Table 9). In 1935 only 4.6 per cent. (15,493 tons[1]) of the total production was stripping coal. By 1939 stripping output had reached 71,169 tons, and accounted for 15.3 per cent. of the total output. The demand arising out of the war has resulted in a much greater stripping output, which reached a peak of 112,922 tons in 1941 (21.2 per cent. of the total output). Since then it has fallen, but not as much as shaft production, which is, of course, more dependent upon labour. The relative importance of stripping has, therefore, continued to increase, and in 1944 stripping accounted for 27.3 per cent. of the total production.

The average output of coal per man day in New Brunswick is lower than in any other part of Canada (see Table 10). The figures published by the Dominion Bureau of Statistics show that the output per man day in the Minto field was 1.606 tons in 1942, compared with 2.080 tons in Nova Scotia, 3.629 tons in the bituminous mines of Alberta, 2.739 tons in British Columbia, and 2.795 tons in the whole of Canada. During the past nine years the output per man was never greater.

The average output per man day in New Brunswick is still smaller when stripping output is separated from shaft production. No such figures are compiled by the Dominion Bureau of Statistics or the Dominion Fuel Board. But in the case of the seven largest operators--the members of the New Brunswick Coal Producers' Association--production per man day for shaft mining averaged 1.23 tons in 1943, and 1.13 tons in 1944. These figures represent a substantial reduction in output per man day compared with 1.37 to 1.45 tons in the period 1936 - 1938, when tonnage from stripping operations was small.

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1. It should be noted that the figures on stripping production, provided by the N. B. Inspector of Mines, cover the fiscal year, Nov. 1 - Oct. 31, and not the calendar year. The total production figures do not correspond, therefore, with the calendar year figures used elsewhere in this report.

The major reason underlying the low output in New Brunswick is the thinness of the coal seam and the physical conditions of the strata, which preclude the continuous use of mechanical operations of the kind used in other coal mining districts.

While there has been a substantial loss in tonnage output over the past decade, it has not been as great as in Nova Scotia or Alberta (see Table 11). In 1936, 1937 and 1938 the loss in New Brunswick was 26, 22 and 33 per cent. respectively, compared with 30, 23 and 37 per cent. in Nova Scotia. During this period, despite a strike, most of New Brunswick's tonnage loss resulted from lack of orders. The percentage loss resulting from this factor ranged from 17.0 to 28.2 per cent. between 1936 and 1938. In 1939, however, orders increased and tonnage loss was cut back sharply, and since the war began, losses from lack of orders have virtually disappeared. There was only a lack of orders loss of 1.8 per cent. in 1942.

The most important factor contributing to war-time tonnage loss has been the shortage of manpower. There were fewer men employed in 1942 (1,033) than in any year since 1933, and in 1943 the number fell to 965. Had it not been for increased output per man day, due to stripping, production would have been considerably less than it was.

Coal Preparation.

Until about twenty years ago there was, generally speaking, no preparation of the coal for market after mining. Most of the coal was shipped as mined. It is now screened, and refuse inherent in the coal seam picked out. Preparation in its simplest form consists of shaking the coal over a screen to separate lump from slack, but now and for some years past, by far the greatest percentage of coal is screened with modern equipment and is carried on picking belts where it is cleaned and loaded in cars.

The usual size of lump coal after separation is +5/8", +$\frac{3}{4}$", or +1$\frac{1}{4}$". Various operators have attempted to increase domestic sales by the preparation of intermediate screened sizes, such as egg, stove and nut coal, but no significant results have been achieved.

From 1938 to 1943 the shipments of nut coal never exceeded 7,100 tons (1939), and in 1942 only 2,287 tons of this grade were shipped.

Between 1937 and 1941 more lump coal was shipped than any other grade, with run-of-mine coal following closely (see Table 12). In 1939 over 36 per cent. of the amount shipped was lump, 27.5 per cent. was run-of-mine, and 23.3 per cent. was slack. Since the war, however, a larger percentage of mine run coal has been shipped (41.7 per cent. in 1943), while lump shipments fell to 27.4 per cent. of the 1943 total.

6. Cost and Price.

Table 13 shows comparative coal mining costs and revenues in New Brunswick, Nova Scotia, and Canada for the years 1939, and 1941 to 1943. It is significant that in 1939 the $3.426 cost per ton in New Brunswick was only 81 per cent. of the cost per ton in Nova Scotia ($4.206), and it was 5 cents lower than the average cost in Canada. This cost differential is of the greatest importance to the New Brunswick coal industry. It is essential that it be maintained if the local coal is to compete successfully with coal possessed of a lower sulphur and ash content. Under the combination of the 1939 cost and price structure the New Brunswick industry just managed to show a profit, 2 cents a ton, after four successive years of substantial losses, ranging up to 16 cents a ton in 1938.

Labour is, of course, the most important element of cost in coal production, and it is relatively more important in New Brunswick than in Nova Scotia or in Canada as a whole. In 1939 labour cost in New Brunswick was 59 per cent. of the total cost per ton, compared with 53 per cent. in Nova Scotia, and 54 per cent. in Canada.

Administration costs in New Brunswick are shown in Table 13 to be much higher than in Nova Scotia and in Canada. In the past the conclusion has often been reached that the New Brunswick industry is supporting a greater administrative load than is justified by the scale of production. The local situation that is not revealed in the cost distribution is the fact that for the most part the mine management in New Brunswick do the selling and marketing, as well as the ordinary

administrative work. Part of these so-called administrative costs should be charged to distribution. When administration and distribution charges are added, the total shows the New Brunswick industry to be materially lower than either Nova Scotia or the average for Canada:

	N.B.	N.S.	Canada
Distribution, Administration and Miscellaneous Costs per ton (1939)	$.363	.714	.518

Thus the joint cost per ton of administration and distribution in New Brunswick in 1939 was only 51 per cent. of these costs in Nova Scotia, and 70 per cent. of the average in Canada.

Workmen's compensation costs per ton of coal produced in New Brunswick have been slightly higher than these in Nova Scotia and Canada, although in 1943 they were lower. It is hoped that they will be reduced in the future. In 1935, although the industry was assessed at the high rate of 6 per cent., a deficit of about $50,000 had accrued against the class. At that time the operators inaugurated a safety drive in the mines which, with the miners' cooperation, reduced accident costs to the point where, despite larger compensation benefits, the class now has a surplus of about $50,000. Benefits are also accruing to the operators in the form of lower rates, resulting in much needed cost reductions.

Because of the small capital structure of the industry in New Brunswick, bond and general interest charges are low (1.5 cents as against 5.8 cents per ton in Nova Scotia, and an average of 3.4 cents in Canada in 1939). Furthermore, the New Brunswick mines are operated by individuals or private companies who have no outstanding interest bearing securities. The operators bear the entire risk themselves. In this connection, the average investment of over $1,000,000 in the field would, if represented by bonds, form a part of the total operating costs, and therefore be recoverable through the existing subsidy. The New Brunswick industry has been forced to do without a return on the investment since it has been operating under the Coal Controller.

Power costs are also low in New Brunswick relative to other sections of Canada. This is due to the limited need for pumping and power equipment for long hauls. But power costs increased by 100 per cent. between 1933 and 1943 (see Table 14), and as more power will be needed for pumping and mechanical operations, the cost will rise still more in the future.

An analysis of costs of the New Brunswick industry for the period 1933 - 1943 is shown in Table 14 and Chart 3. Total cost per ton increased from 1933 to 1935 (chiefly because of increased labour costs), fell off in 1936, and settled at $3.43 in 1939. From that time they have climbed rapidly, increasing by 36 cents in 1940, another 29 cents in 1941, 43 cents in 1942, and by 54 cents in 1943. Between 1939 and 1943 total costs per ton increased by $1.62 (47 per cent.). By far the greater part of this increase (78 per cent.) has resulted from increased labour costs, which were raised by $1.26 per ton (63 per cent. increase). There was another substantial increase in labour cost in 1944, when the National War Labour Board increased all wages by $1.00 per day, along with one week's vacation with pay. The exact amount of the increase in the cost per ton of coal to the industry is not yet available, but it is costing the individual operators an additional 90 cents to $1.00 per ton.

The cost of stores has been reduced since 1939, while rent and royalties, and workmen's compensation have remained at about the same level. As already indicated, power costs have gone up, and administration and distribution together were 13 cents per ton higher in 1943 than in 1939.

It is of the greatest importance to note that the gap between cost per ton in New Brunswick and Nova Scotia has been closing since the beginning of the war. In 1939 there was a difference of 78 cents per ton in New Brunswick's favour. By 1941 it was decreased to 60 cents, and to 49 cents in 1942. It increased again to 73 cents in 1943, due chiefly to a sharp increase in the Nova Scotia costs for stores and labour in that year, and a sharp decrease in taxes and insurance in New Brunswick. The $1.00 per day increase ordered in New Brunswick in 1944 will result in a substantially greater relative increase in labour cost per ton than in Nova Scotia, due to the lower

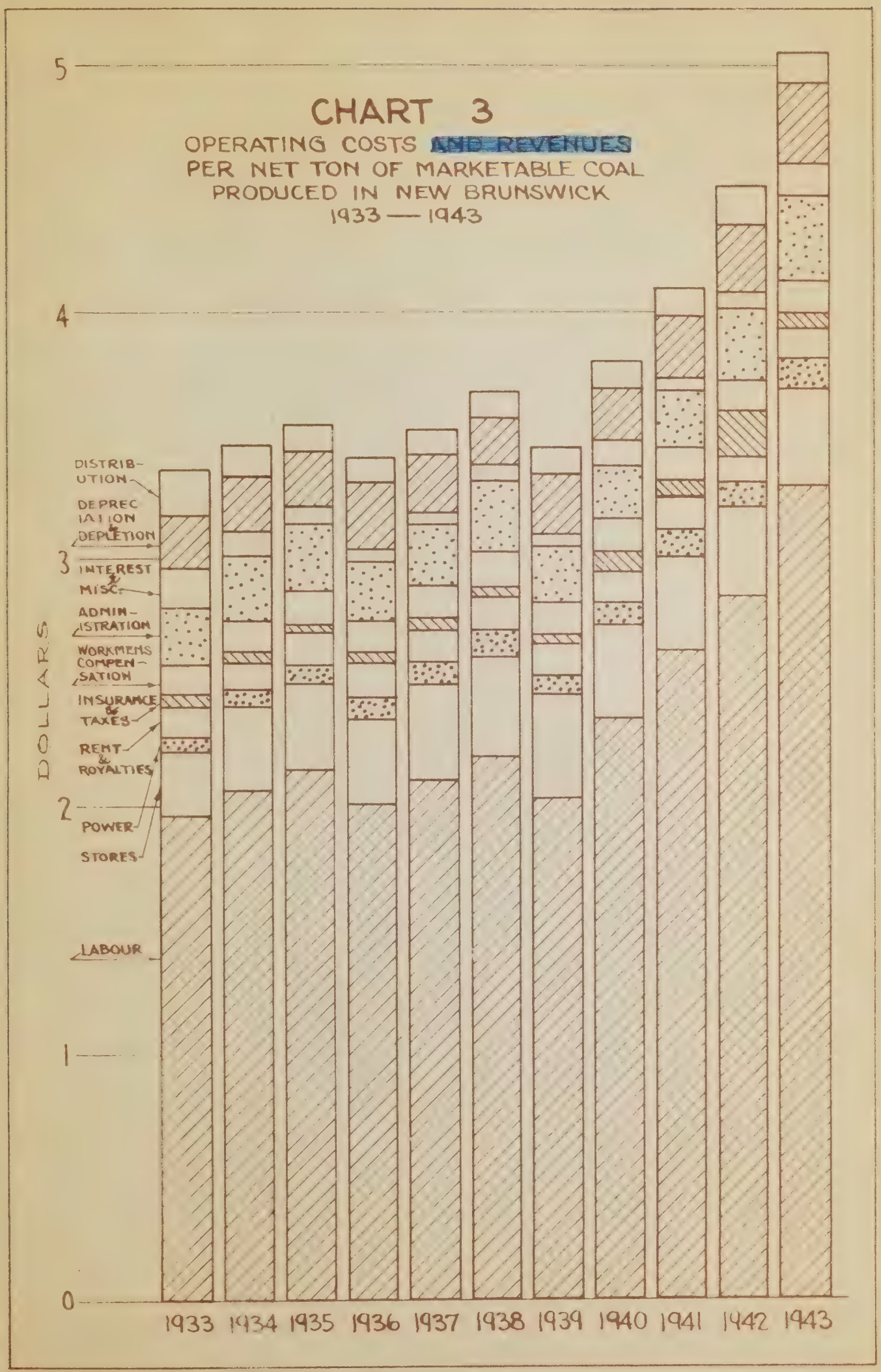
CHART 3
OPERATING COSTS AND REVENUES
PER NET TON OF MARKETABLE COAL
PRODUCED IN NEW BRUNSWICK
1933 — 1943
DOLLARS
5
4
3
2
1
0
DISTRIB-UTION
DEPRECIATION & DEPLETION
INTEREST & MISC.
ADMIN-ISTRATION
WORKMENS COMPEN-SATION
INSURANCE & TAXES
RENT & ROYALTIES
POWER
STORES
LABOUR
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943

output per man day.

The major reason for the decreasing cost differential between the two provinces has been the relatively larger increase in labour cost in New Brunswick, as shown in the following figures:

	N. B.	N. S.	Canada
Increase in 1941 over 1939	$ .60	$ .37	$ .15
Increase in 1942 over 1941	.23	.28	.15
Increase in 1943 over 1942	.43	.51	.22
Increase in 1943 over 1939	1.26	1.16	.52
% increase 1939 - 1943	62%	51%	27%

Not only has labour cost in New Brunswick increased to a greater extent than in Nova Scotia, but it has been relatively more important in New Brunswick, and has become still more important during the war years, as shown in the following figures:

Ratio of Labour Cost to Total Cost	N. B.	N. S.	Canada
1939	59%	53%	54%
1941	64	56	58
1942	63	58	58
1943	65	59	58

This is a result of wage increases ordered by the National War Labour Board which in effect place the basic wage in New Brunswick at substantially the same level as that in other mining districts in Canada. The incidence of the wage increases bears more heavily on the New Brunswick industry than in Nova Scotia and other parts of Canada because of the lower production per man day in New Brunswick.

The War Labour Board recognised the economic implications of such wage equalisation for the New Brunswick industry, and it was stated, "If present subsidies (arising out of wage increases) are converted into price increases that will mean a further price increase of about 70 cents per ton. If that takes place then the New Brunswick operator has something real to worry about. So has the New Brunswick miner".[1]

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1. National War Labour Board, Re: Avon Coal Co., Minto Coal Co., Welton and Henderson Coal Co., G. H. King Coal Co., E. S. Crawford Coal Co., and United Mine Workers of America, District 26. (Feb. 15, 1944).

Yet, notwithstanding this concession that wage equalisation has very serious effects upon the New Brunswick industry, the Chairman of the Board ordered the wage increase, remarking, "We cannot see why he (the miner) should be dealt with on a strictly economic basis when that has now ceased to be a factor in the industry generally. It has really become the job of other agencies to adjust the economics of the coal industry".

The long-term price pattern of Minto coal has been one of gradual increase, marked by an all-time peak during the inflation following the last war, a subsequent levelling out, and then another period of increase after the depression which has now resulted in another price inflation in which the 1944 average was $5.37 f.o.b. mines, a figure exceeded only in the 1920 post-war inflation (see Table 7).

The average pre-war price of Minto coal, f.o.b. mines, was considerably lower than that of Nova Scotia, and British Columbia coals, and similar to the price of the Alberta Bituminous coal. It was somewhat lower than the average price for all Canadian coal, including semi-bituminous and lignite. The only Canadian coal competing with Minto comes from Nova Scotia, and comparative mine price figures for these two coals are important in view of the keen competition which prevails normally in the market.

In 1939 the average mine price of all Minto coal was only 79 per cent. of the average in Nova Scotia, $3.405 per ton compared with $4.294. The price spread of run-of-mine and lump coal in the two provinces in 1938 and 1939 was as follows:

Year	Mine Run			Lump		
	N. B.	N. S.	Difference	N. B.	N. S.	Difference
	$	$	$	$	$	$
1938	3.23	3.79	.56	3.82	4.58	.76
1939	3.02	3.76	.74	3.76	4.48	.72

Since 1939, when there was a sufficient price differential to enable Minto coal to compete with the better grade coal from Nova Scotia, the price differential has narrowed substantially, due to the closing of the gap between costs in the two provinces.

In 1941 the average price received by the New Brunswick operators was 94 per cent. of the average price in Nova Scotia, $4.170 as against $4.445. In 1942 and 1943 there was an average difference of only 41 and 46 cents respectively.

The situation is shown more clearly in price figures for the two most important grades of coal shipped from the Minto mines--run-of-mine and lump.

Year	Mine Run			Lump		
	N. B.	N. S.	Difference	N. B.	N. S.	Difference
	$	$	$	$	$	$
1939	3.02	3.76	.74	3.76	4.48	.72
1940	3.31	3.69	.38	4.14	4.66	.52
1941	3.90	4.11	.21	4.59	4.75	.16
1942	4.21	4.95	.74	5.06	5.01	-.05

The successive increases in prices and costs, resulting in decreasing the differential between the mine prices of coal in New Brunswick and Nova Scotia (eliminating it entirely in the case of lump coal in 1942), have very serious results for the New Brunswick industry. If such a condition is continued after the national fuel emergency has passed, the New Brunswick industry cannot survive. A substantial price differential must exist if the consumer is to be induced to burn the high ash and sulphur New Brunswick coal. Furthermore, the price spread must be greater than the actual difference in the inherent heat value of New Brunswick and Nova Scotia coal. The geographic advantage of the Minto field for supplying the New Brunswick market has been wiped out by very low freight rates on competitive coal moving into the New Brunswick market, and the price differential necessary to enable Minto coal to compete has to be reflected in the price f.o.b. mines in the Minto area.

In the eleven year period 1933 - 1943 the New Brunswick coal industry showed an operating loss in six years, a profit in five. In the pre-war period profits fell from 14 cents to 3 cents a ton (1933 and 1934), and then in four successive years the industry operated at a loss which reached a peak of 16 cents per ton in 1938.

In 1939 a profit of 2 cents per ton was made, and this was maintained through 1940. By 1943, however, despite very high average prices, the greatly increased costs resulted in an operating loss of 16 cents per ton (see Table 14 and Chart 4).

During the pre-war period (1933 - 1939) the industry lost $65,875, or 2.6 cents per ton. Since the war another $31,390 has been lost, making a total loss of $97,265 for the eleven year period. It should be stressed again that these losses were incurred without any interest being charged against invested capital.

In summary, it should be noted that the production of shaft mined coal is now much lower than it was in 1941. The principal causes for this marked decrease have been a reduction in the number of miners available, coupled with reduced output per man day. Furthermore, in several mines much more difficult and therefore more expensive underground working conditions have been encountered because the more readily accessible coal has been exhausted.

As a result of these conditions there has been a marked increase in cost per ton over and above the increase caused by the payment of higher wages. Wages and prices are, of course, frozen. Revenue is derived from two sources--sales of coal and subsidy. At some mines the revenue received has been insufficient to pay all costs, so that these mines have in past months been worked at a loss. It is apparent that they will be unable to continue in operation without an increase in revenue from one source or the other.

7. The Market

The nature of Minto coal has limited its distribution for the most part to the industrial and railway market. Table 17, based on coal sales of five leading operators, shows that in the period from 1938 to 1944 there were from 12,496 to 23,911 tons sold for domestic and institutional consumption. The relative importance of this tonnage ranged from 4 to 7.3 per cent. of the total sales of these companies. All of the rest was sold for industrial and railway use.

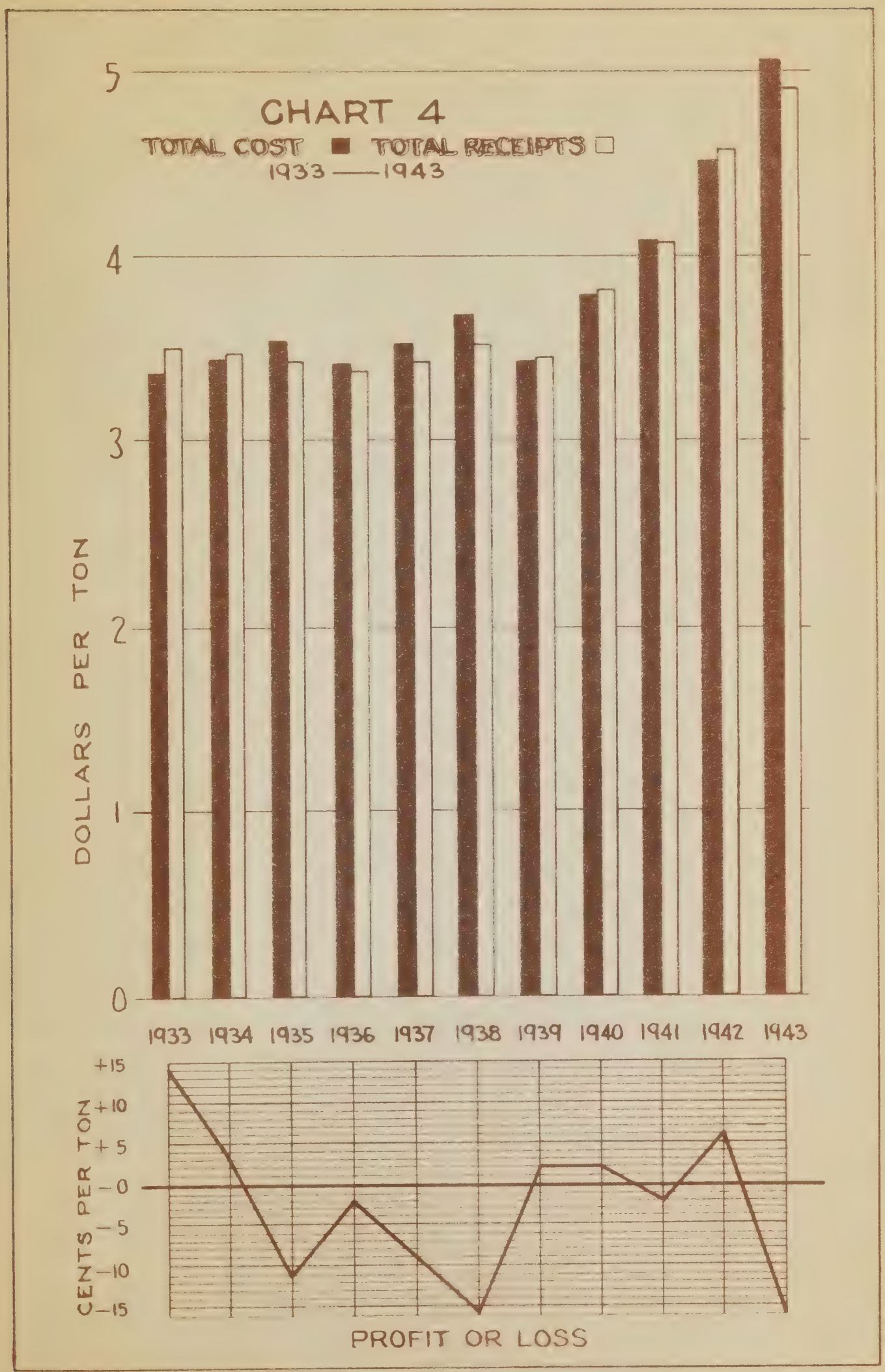
CHART 4
TOTAL COST ■ TOTAL RECEIPTS □
1933 —— 1943
DOLLARS PER TON
0
1
2
3
4
5
1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943
CENTS PER TON
+15
+10
+5
0
−5
−10
−15
PROFIT OR LOSS

New Brunswick is the natural market for Minto coal, and most of it is sold within the province, as shown in Table 15 and in the following tabulation:

Sales of Minto Coal in Tons, 1938 - 1943.

Year	N. B.	% of Total	Quebec	% of Total	Maine	% of Total	Ratio N.B., P.Q., Maine to Total
1938	283,197	84.8	29,796	8.9	18,837	5.6	99.3
1939	385,453	83.4	48,580	10.5	25,432	5.5	99.4
1940	451,851	84.5	53,745	10.1	26,186	4.9	99.5
1941	432,883	84.5	39,750	7.8	37,682	7.4	99.7
1942	390,507	91.5	6,384	1.5	29,875	7.0	100.0
1943	327,998	90.1	5,914	1.6	29,727	8.2	99.9

In 1939 some 83.4 per cent. of the sales were made in New Brunswick, and this ratio has increased during the war, due principally to the sharp reduction in sales to Quebec. The pre-war market in Quebec resulted from the federal policy of assisting the Canadian coal industry by paying subventions on inter-provincial coal movements. Under this policy Minto coal shipments to Quebec rose from 11,101 tons in 1934 to a peak of 53,745 tons in 1940, although the movement of New Brunswick coal under the subvention has been relatively small, and has cost the Dominion Government only $221,706 since 1928. Only 290,849 tons have moved under this arrangement in sixteen years (see Table 16).

The Maine market has been relatively firm over the past six years, and it is an important market for Minto slack. Between 1938 and 1943 from 72 to 93 per cent. of the coal shipped to Maine was slack, used by the pulp and paper industry. Maine has recently been taking from 20 to 25 per cent. of the total quantity of Minto slack that has been sold.

The New Brunswick Market.

Normally the two Canadian railroads constitute by far the most important part of the provincial market, and the industry is virtually dependent upon the railways for its existence, in that they furnish the only substantial market for the larger sizes of lump coal.

Beginning in 1939 the Canadian National Railway substantially increased its tonnage of lump coal taken from the field, and in 1940 purchased 160,940 tons from the seven largest operators, compared with 106,314 tons in 1938. At the same time the C. N. R. agreed to take this increased tonnage in about equal quantities monthly, thus enabling the operators to improve their summer operating position which previously had been at a low level. The operators were also enabled to plan their sales of slack coal derived from screening for the railway, and secure markets for slack, knowing in advance what tonnage would be available each month.

The increase in regular monthly sales to the C. N. R. has been of great assistance to the industry, and it is absolutely essential that this business be retained.

The following figures show the purchases of Minto coal by the two railroads from 1934 to 1943 (the approximate consumption of each railway is shown in Table 18):

Year	Railway Purchases	Per Cent. of Total Sales
1934	154,851 tons	50.3 %
1935	177,351	52.0
1936	175,797	48.8
1937	159,772	44.9
1938	138,611	45.4
1939	178,830	63.3
1940	200,539	52.2
1941	172,153	38.1
1942	138,807	32.1
1943	104,488	26.6

During the pre-war years, railway sales accounted for 45 to 63 per cent. of the total sales, but since 1942 there has been a sharp cutback in the amount sold to the railways, despite the increasingly large quantities of coal consumed by them. In 1943 the railroads purchased less Minto coal than in any of the pre-war years examined, while purchases of Nova Scotia coal for railroads in New Brunswick have increased sharply, as shown in the following figures:

Railroad Purchases of N. B. and N. S.
Coal in New Brunswick, 1937 - 1942.

Year	N. B.	N. S.	Ratio N.S. to N.B.
1937	159,772 tons	105,420 tons	65.6 %
1938	138,611	110,303	79.1
1939	178,830	104,215	58.1
1940	200,539	157,626	78.6
1941	172,153	334,547	194.8
1942	138,807	336,326	241.7

Most of the Minto coal purchased by the railways is lump (see Table 15), and the average price of Minto lump, f.o.b. mines, in 1941 was nearly as high as the price of Nova Scotia lump, and was 5 cents per ton higher in 1942. It is obvious that if this situation continues to exist after the war, Minto coal simply cannot compete on such a price basis, and this most important segment of the market will be lost in large part unless a readjustment of prices is made possible.

The Grand Lake Plant of the New Brunswick Electric Power Commission is another major market for the Minto industry. Consumption of Minto coal in this plant since 1937 has been as follows:

Minto Coal Consumed by the N. B. Electric Power Commission's Grand Lake Plant

Year	Tons Consumed	% of Total Minto Sales in N.B.
1937	33,567	11.1
1938	26,403	9.2
1939	27,486	7.0
1940	47,229	12.2
1941	55,059	12.1
1942	60,537	14.1
1943	64,358	16.4

There has been a steady increase in sales to the Power Commission since 1938, and the 1943 sales were 36,872 tons (134 per cent.) greater than in 1939. The ratio of Power Commission sales to total sales in the province increased from 7 per cent. in 1939 to 16.4 per cent. in 1943.

It is of the greatest importance that the industry not only retain this market, but receive the benefit of any further extension of steam generating capacity in the province. Here again price is of the greatest importance, since Minto coal must compete on the basis of available B.T.U. in the fuel. The urgent need for cheap electric power in New Brunswick is incompatible with the present price of Minto coal in relation to the price of alternative fuels for the generation of power.

The pulp and paper industry provides the other important market for Minto coal, and its relative importance is shown in a sample market analysis, based upon the sales of six of the largest operators in the district, who sold from 80 to 90 per cent. of all the Minto coal sold in the New Brunswick market between 1939 and 1943. The following figures show the relationship between the sales by these operators to the pulp and paper industry in New Brunswick and their total sales from 1938 to 1944:

New Brunswick Sales of Six Large Minto Operators, 1938 - 1944.

Year	Total Sales	Sales to N. B. Pulp and Paper Industry	% of Total
1938	222,257 tons	45,823 tons	20.7 %
1939	341,844	118,080	34.5
1940	392,037	110,701	28.3
1941	376,581	107,468	28.4
1942	346,066	113,896	32.7
1943	297,817	114,729	38.6
1944	273,988	106,650	39.1

Assuming that the sample is representative of the sales of the entire coal industry, about one-third of all the Minto coal sold is normally used by the pulp and paper industry. In 1943 and 1944 this market became relatively more important, due to the decrease in total output and sales. In 1943, the sales of these six operators to the pulp and paper industry in New Brunswick were greater than the total sales of the industry to the railroads. Yet the tonnage taken by the pulp and paper industry has fallen during the war, and in 1944 it was only 90 per cent. of the 1939 figure. The relatively sharp decrease from 1943 to 1944 reflects the effect of the high price of Minto coal, stressed previously in this submission. In 1944 the New Brunswick industry provided only about 50 per cent. of the coal consumed by the pulp and paper industry.

This tonnage loss can be regained and the additional part of the market served only by a resumption of the price differential between New Brunswick and Nova Scotia coals which existed prior to the war. This price differential can be maintained only if the pre-war wage differential is maintained, along with equalisation of freight charges, a matter which will be discussed presently.

The chief centres of the New Brunswick market are shown in Table 18. Dalhousie, Edmundston, and Bathurst, all pulp and paper centres, the Grand Lake Power Plant and the Saint John-Fairville industrial centre absorb most of the Minto coal that is not taken by the railways. In 1939 these centres absorbed 87 per cent. of the total provincial sales of Minto coal, exclusive of

railway and Power Commission sales.

The apparent consumption of coal in New Brunswick is shown in Table 19. The total tonnage available for consumption increased from 863,296 tons in 1938 to 1,598,082 tons in 1942, an increase of 85 per cent.

Prior to the war the New Brunswick mines normally supplied more than one-third of the coal consumed in the province. In 1939, for example, 38.8 per cent. of the total was supplied from Minto, in competition with Nova Scotia, and to a much lesser extent with the United Kingdom and the United States (see Table 20). During the war, however, several factors have squeezed the New Brunswick operators into a smaller portion of the provincial market.

The total tonnage of imported coal has decreased since 1940, and was lower in 1942 than in 1939 by 11,743 tons. But Nova Scotia, losing a large part of its Central Canadian market because of war-time shipping conditions, has necessarily looked to the New Brunswick market as an outlet. Shipments of Nova Scotia coal to New Brunswick and Quebec since 1937 have taken the following course:

Year	N. B.	Quebec
1937	627,725	3,336,001
1938	534,549	3,057,995
1939	579,619	3,498,037
1940	749,290	3,322,525
1941	1,102,524	2,079,875
1942	1,178,448	1,662,120

With better grade Nova Scotia coal available at similar prices to Minto coal, the New Brunswick sales of Minto coal have fallen relative to the total sales of coal in the province. In 1942 Minto coal supplied only 24.5 per cent. of the New Brunswick market, as compared with 38.8 per cent. in 1939.

It has already been indicated that the nature of Minto coal has mitigated against its general use as a domestic fuel. In recent years from 4 to 7 per cent. of the sales have been for domestic and institutional use, and most of this quantity has been burned in hospitals and public buildings for raising steam. It can be used with good results in furnaces with proper stoking facilities, but it is unlikely that even a large increase in stoker installations would affect the domestic market to any appreciable extent.

A new development has taken place, however, that is worth mention. A heating unit called the "warm morning heater" has been developed recently. Several of these stoves have been installed in the Minto district, and they have so far given such remarkable performance that it is felt that their general use would result in an increase in demand for Minto coal for domestic use. Undoubtedly a furnace on the same principles will be produced. It is possible, therefore, that the domestic demand for Minto coal may increase, but only if the price is competitive.

Yet the overall domestic market for coal is limited by competing fuels. The 1941 Census reports that there are 91,894 occupied buildings in New Brunswick. Of these, 69,380 burn wood, so that 22,514 are left for coal, coke, fuel oil or natural gas. In the City of Moncton natural gas is used to a large extent. It has been estimated that the quantity of gas burned there is the equivalent of 32,000 tons of coal. This means that about 5,000 buildings are removed from the potential domestic coal market, leaving 17,514.

The average consumption of anthracite in New Brunswick amounts to some 80,000 tons annually (see Table 20), which would heat an estimated 12,000 buildings. Thus only 5,514 are left as a domestic market for bituminous coal, coke or fuel oil. It is obvious, then, that under the best of conditions there cannot be an important domestic market for Minto coal in New Brunswick.

8. Processing and By-Product Possibilities.

At various times since 1912 samples of New Brunswick coal have been examined at the Fuel Research Laboratories of the Bureau of Mines, Ottawa. In 1923 the first systematic study was made of the coal in the Minto area to determine the quality of coke produced, and the results were reported in Investigations of Fuels and Fuel Testing, 1923. Large scale coking tests were made under the auspices of the Dominion Fuel Board in the Semet-Solvay ovens of the Hamilton By-Product Coke Ovens, Limited. The results of this test, along with a washing test, are reported in Investigations of Fuels and Fuel Testing, 1924 (B. F. Haanel and R. E. Gilmore). In 1929 further tests were made with a view to the possible establishment of a low temperature carbonization industry in New Brunswick. In 1939 and 1940 another detailed test program was carried out in connection with coking, and the results published in R.I.C.S. No. 148, "Carbonization Tests on Washed New Brunswick Coals by the Curran-Knowles Process at the Plant of the Public Utilities Commission, Owen Sound, Ontario", (June 19, 1940).

The operators and the New Brunswick Advisory Board for Economic Development have given careful consideration to the advisability of washing the coal in order to improve its marketability. It is doubtful if such a plan would prove sound economically. The Fuel Research Laboratories reported, after extensive tests, that "the coals appear difficult to wash, and in most cases the reduction in the impurities obtained by washing is insufficient to warrant the installation of expensive cleaning or washing plants". (R.I.C.S. No. 48, p. 43)

Coking tests under both high and low temperatures indicate that a satisfactory domestic coke can be produced from Minto coal, but it contains more sulphur than Nova Scotia coke. The important point concerning the coking of this coal is not whether it can be done, but whether it can be marketed. Dosco coke, which is of better quality than the coke produced from New Brunswick coal, has been on the market for a long period of years. While no figures on coke consumption are available, it is doubtful if in normal times more

than 10,000 tons are sold in the entire province. It seems certain that if any substantial market for coke existed in New Brunswick, the Dominion Steel and Coal Company would long since have exploited it fully.

9. Freight Rates.

It has already been pointed out that, unlike the Nova Scotia industry which markets its coal throughout eastern Canada, the New Brunswick coal industry must depend primarily upon the New Brunswick market. The Minto-Chipman district has no water transportation outlet, so that all of the coal must be moved over one or the other of the two railroads. A considerable portion of it moves over both of them, since most of the operators are located on C. P. R. spurs and market much of their coal in areas served only by the C. N. R.

The movement of Minto coal into other provinces is restricted by a structure of rail freight rates so high in comparison with water rates that it cannot compete in Ontario or Quebec (except in the Eastern Townships) with Nova Scotia coal shipped into these provinces by water and then reshipped to destination by rail. It is true, of course, that a small tonnage of New Brunswick coal has moved to Quebec under subventions (see Table 16), but most of these shipments have been to the Eastern Townships district.

It has been shown that Minto coal supplies only a small part of the total coal consumed in New Brunswick (see Table 19). The major factor which has operated against the New Brunswick industry in its own market is the fact that Nova Scotia coal moves into New Brunswick at substantially the same freight rates as are applied to New Brunswick coal moving to the same distribution points, despite the materially longer hauls for Nova Scotia coal.

A few of the freight rates which are now in effect on the movement of coal from the Minto-Chipman district to points in New Brunswick, compared with the rates on Nova Scotia coal to the same points, are indicated in Table 21. A summary of some of these comparative rates to the most important coal consuming centres in New Brunswick is as follows:

Rate per Ton Mile

Destination	C.P.R. ex Minto	C.N.R. ex Hardwood Ridge	C.N.R. ex Springhill Junction	C.N.R. ex Sydney
	$	$	$	$
Bathurst	.0065	.0052	.0042	.0035
Dalhousie	.0056	.0047	.0044	.0035
Saint John	.0090		.0055	.0044
Marysville	.0257	.0177	.0077	.0050
Edmundston	.0055	.0066	.0040	.0035

On a basis of freight per ton, some of the rates from Springhill Junction, Nova Scotia, are lower than rates from the Minto field to the same points in New Brunswick, as shown in the following figures:

Destination	C.P.R. ex Minto	Mileage	C.N.R. ex Springhill Junction	Mileage
Bathurst	$1.10	169	$0.80	188
Campbellton	1.50	234	1.20	253
Dalhousie	1.30	231	1.10	250
Saint John	0.90	101	0.85	155

It can be seen from these comparisons that the rate structure applied to the movement of coal from Nova Scotia to New Brunswick bears no relationship to the cost of service.

When it is remembered that most of the mines are located on C. P. R. spurs, it will be seen that despite the shorter haul to the important New Brunswick consuming centres on the C. N. R., they are forced to pay a higher freight rate than competing coal from Nova Scotia. The economic consequences of such a freight rate structure must be obvious.

Another important feature of the transportation system in the Minto field is the structure of switching charges between railways. While it may seem that the field benefits from service by two railways, it should be understood that no such advantage actually exists.

The first railway connection to the Minto field was made nearly forty years ago, when the New Brunswick Central Coal and Railway Company, connecting with the C. N. R. at Norton, was extended into the Minto field. This railway was constructed with the assistance of government subsidies, and its extension into the coal field reflected government policy of assisting in the development of the Minto-Chipman coal mining area. Included in the railway construction program was the construction of spurs into the mines themselves.

This railway system, operated under a Commission appointed by the New Brunswick Government, was the only railway transportation to the field for several years. About 1912 the Fredericton and Grand Lake Coal and Railway Company was built from Devon, N. B., to the scales siding about three miles west of Minto, where it met the tracks of the New Brunswick Central Coal and Railway Company. The coal area development policy of the Provincial Government was reflected again in this case, where the Province guaranteed the bonds issued to construct the railway.

Shortly after the Fredericton and Grand Lake Railway was completed, both of these systems were taken over by the C. P. R. under long term lease. Since the C. P. R. has taken over the operation of these two railways, including the mine spurs, various items of cost formerly met by the New Brunswick Central Coal and Railway Company have had to be assumed by the mine operators. These items include building and maintenance of mine spurs and sidings, and the payment of rail rental on these spurs, as well as extra switching charges.

The next change in the coal field transportation system took place in the early twenties, when the C. N. R. built a six mile spur from Hardwood Ridge on the Transcontinental Division to the mines of the Minto Coal Company in the North Minto district. This spur also serves the mines of the Miramichi Lumber Company.

There is, however, no way in which the operators in the South Minto district (and most of the mines are in this area) can route their coal over this spur to the main C. N. R. line at Hardwood Ridge, although the C. P. R. and C. N. R. tracks are joined. There is no railway operating organization which can move the cars from the C. P. R. spurs in South Minto to the C. N. R. spur. The operators in South Minto must, therefore, route their coal via C. P. R. to Chipman, which is on the C. N. R. main line, paying a switching charge of 30 to 35 cents per ton. This method of moving South Minto coal to C. N. R. destinations in the north of the province involves an extra rail haul of some 15 miles. Such an uneconomic condition could be eliminated if an inter-switching organization were set up in the Minto yard. A move of this kind would in effect provide the South Minto operators with a direct C. N. R. outlet, which should assist them materially in increasing their sales to the C. N. R. itself.

In view of the extra charges of 30 to 65 cents per ton of coal moved to the Grand Lake Power Plant, a broader revision of the local rate structure is needed. The incorporation of Hardwood Ridge, Chipman and the Grand Lake Power Plant into the Minto yard limits would provide one solution to the problem.

A schedule of switching charges in force in the Minto field is presented in Appendix B. It will be noted that provision is made for a charge of not less than $2.00 per car over and above the rate from the station when switching service is provided on sidings beyond an area of 1,000 feet from the connecting switch. On distances over two miles from the switch another extra charge of 50 cents per mile or fraction of a mile is added. This charge bears heavily on some mines, since most of them are relatively far from the main line, and they are placed at a decided disadvantage in relation, for example, to the mines in Pictou County, Nova Scotia, most of which are over 1,000 feet from the main line. Some of these operators perform their own switching, and it is understood that no charge is made by the Canadian National Railways to and from the Pictou mines located on the long spurs.

It is submitted that the unequal freight rate structure and the heavy switching charges in the Minto field represent a burden on the industry so heavy as to hinder the marketing of the coal in competition with Nova Scotia coal. In 1941 the switching charges paid by six leading operators on coal movements in the district amounted to $41,199, and an additional amount of $9,385 was paid by these operators on coal moved to the Grand Lake Power Plant. Thus they paid $50,584 for coal movements within the district. This payment by six operators amounted to 2.5 per cent. of the total costs of the whole industry ($1,963,519) to produce the 523,344 tons of coal in 1941. Switching charges of these six operators were greater than the total combined payments for insurance, taxes, rent and interest for the whole industry, and were nearly as large as the total bill for power ($53,094), and royalties ($57,386).

It may be assumed for the purpose of the argument in this submission that, prior to the granting of subventions, Sydney coal moved by water to points on the St. Lawrence River was unable to penetrate further west than Montreal. In an effort to increase the production of Canadian coal by substituting it for American bituminous coal in Central Canada, the Dominion Government granted subventions of various kinds to enable Nova Scotia coal to reach large consuming points in Central Ontario on the same price basis at which competing American coal would be offered. These subventions were based upon several different kinds of rail and water movement to destination, and they are all set forth in Order-in-Council P.C. 2789 of November 8th, 1938 (rescinded in 1939, and replaced by P.C. 3969, December 5th, 1939, which lowered the subventions as a war-time measure).

The benefits received annually, between 1933 and 1943, by the Nova Scotia coal industry, as compared with those received by New Brunswick, are shown in Table 16. The Dominion Government has expended on Nova Scotia coal during this period sums ranging from $1,250,000 to $2,988,000 annually, totalling $21,910,000. The tonnage on which subventions were paid ranged from 803,892 tons in 1943 to 2,420,694 tons in 1939. A total of 20,422,112 tons were moved under this assistance in the period 1928 - 1943.

In addition to the above expenditures, three railways owned by Nova Scotia coal companies have received monetary benefits of some 8 cents per net ton from the Dominion Government under the terms of the Maritime Freight Rates Act, applied to coal movements to seaboard for water shipment. These are the Cumberland Rail and Coal Company, the Maritime Railway and Power Company, and the Sydney-Louisburg Railway Company.

Furthermore, direct assistance within the Province of Nova Scotia has been given to the coal industry by the Dominion Government in the form of a bonus on coal used by the Dominion Steel and Coal Company to make coke used in the manufacture of steel. The average annual cost of this assistance during the years immediately preceding the war was approximately $220,000.

A comparison of the subvention expenditures in Nova Scotia and New Brunswick in 1939 shows a marked difference on a per ton basis. The subvention paid per ton of coal moved from Nova Scotia was $1.23, as against 84 cents in New Brunswick. In terms of total output of the two provinces in that year (7,051,176 tons in N.S., 468,421 tons in N.B.), Nova Scotia received assistance at the rate of 42.3 cents per ton of coal produced, compared with 9.7 cents in New Brunswick.

The coal producers in the Minto-Chipman district of New Brunswick approve whole-heartedly of both the principle involved in assisting the Nova Scotia industry and the extent to which it has been assisted in the past. Unfortunately, however, this type of assistance is not based upon a principle which is applicable to the New Brunswick industry. As already stated, the Minto-Chipman operators are virtually compelled to market their output in the industrial market of New Brunswick. We feel that there is just as good a case for federal assistance to New Brunswick as for Nova Scotia, and moreover, that the assistance in terms of total output should be on a more equitable basis in the two provinces. Comparing again the assistance per ton of output in 1939, 42.3 cents in Nova Scotia and 9.7 cents in New Brunswick, it appears that a substantially larger sum could and should be appropriated to put the assistance given to the New Brunswick industry on a basis comparable with that

in Nova Scotia. It need hardly be pointed out that New Brunswick has contributed its share of the cost of assistance granted by the Dominion Government to all of the other coal producing provinces.

Any effective assistance given to the New Brunswick operators must, however, be based upon a principal different from that applied in the case of Nova Scotia. Nova Scotia must distribute its coal over the whole eastern Canadian market--Ontario, Quebec and the Maritimes. New Brunswick, on the other hand, must concentrate on the New Brunswick market. It is of the greatest importance, therefore, that New Brunswick coal be allowed to compete in this market. Normally it could, if the cost of rail transportation to the main market centres were comparable with the costs borne by Nova Scotia coal.

In the pre-war period it was necessary, because transportation charges were so high, relative to those on Nova Scotia coal moving into New Brunswick, to accept such a low price, f.o.b. mines, that the industry operated at a loss over a long period of years. The volume of sales was curtailed to such an extent, and the actual working time (particularly in the summer months) so restricted, that it was impossible either to pay wages commensurate with the hazards of the industry or to secure a return on the capital invested.

Equalisation of the freight rate structure applicable to Nova Scotia and New Brunswick coals moving to New Brunswick distribution centres, and the elimination of switching charges in the Minto-Chipman area would, we feel, help the New Brunswick industry to maintain competitively its optimum output of 500,000 tons per year.

It is not suggested that the freight rate structure be changed. Rather it is requested that freight rate subventions be granted on New Brunswick coal movements within the province in an amount necessary to equalise the lowest rates per ton mile on Nova Scotia coal moving to this province, and the rates paid on New Brunswick coal moving to the same distribution points.

It is also requested that every mine in the Minto-Chipman field be relieved of all local freight and shunting charges so that coal from each mine can be placed on the C. N. R. main line at Chipman and Hardwood Ridge, on the C. P. R. main line at Minto, Chipman and Coal Creek, and at the Grand Lake Power Plant without any cost of transportation.

The proposal which is made in this submission involves the application of a freight rate subvention on New Brunswick coal moved to points within the province. Assistance of this kind does not appear to involve the Dominion Government in any new or untried policy. It is not a new principle, it is merely different from the existing subvention policy. Precedent has been established by the Maritime Freight Rates Act, under which a portion of the transportation cost of coal and other commodities is borne by the Dominion Government, regardless of whether the movement is entirely within one of the Maritime Provinces, or from the Maritimes to other provinces.

Again, under Order-in-Council P.C. 3971 (Dec. 5, 1939), British Columbia coal producers are granted an allowance of 75 cents per net ton of coal supplied for bunkers of ocean-going ships. There appears to be no provision disallowing this assistance to coal supplied to vessels engaged in coastal trade in British Columbia.

D. RECOMMENDATIONS.

In view of the fact that the Minto coal field is dependent upon the New Brunswick market as an outlet for most of its coal, and since Minto coal must compete in this market with superior coal from Nova Scotia and other places, it is essential to the future of the field that it receive the full benefit of its favourable geographic location in relation to that market. Under the existing freight rate structure it is impossible for the Minto producers to secure the natural advantage which should be theirs. It is therefore recommended that the following policy be implemented by the Dominion Government:

1. The payment by the Dominion Government of all switching charges now levied on the movements of coal in cars from the various mines in the district to the main lines of the Canadian National Railways and the Canadian Pacific Railway and to the New Brunswick Electric Power Commission's plant at Grand Lake.

2. The payment by the Dominion Government of rail subventions on the movement of all coal from the Minto-Chipman district to points within the province, the amount of the subvention to represent the difference between the lowest rates per ton mile in effect on competing Nova Scotia coals shipped to the principal consuming markets in New Brunswick, and the rates in effect on coals shipped from the Minto-Chipman district to those same consuming points.

3. The payment of an additional subvention by the Dominion Government, over and above that named in Clause 2 above, on New Brunswick coal shipped to ports such as Saint John, Bathurst, Campbellton and Dalhousie in such amount as may be necessary to meet the competition of foreign waterborne coals.

A P P E N D I X A

STATISTICAL TABLES

TABLE NO. 1

Relationship between the Net Value of Coal Production and the Net Value of Total of All production in New Brunswick 1930 - 1942

Year	Net Value of Coal Production[1]	Net Value of Total Production[2]	Ratio of Coal Production to Total
	$000	$000	%
1930	864	78,773	1.9
1931	743	64,308	1.2
1932	794	54,064	1.5
1933	1,042	50,036	2.1
1934	1,026	55,405	1.8
1935	1,129	58,946	1.9
1936	1,190	63,573	1.9
1937	1,181	71,137	1.7
1938	1,133	70,048	1.6
1939	1,566	75,136	2.1
1940	1,962	90,119	2.2
1941	2,021	103,968	1.9
1942	1,826	128,163	1.4

1. Figures taken from Coal Statistics for Canada, 1942.

2. Figures taken from Canada Year Book, various editions.

Note: "Total production" includes the production of the following industries--agriculture, forestry, fisheries, mining, electric power, construction, custom and repair, and manufacturing.

TABLE NO. 2

Employment and Earnings in the Coal Mines of New Brunswick, 1933 - 1942

	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Average No. of Employees:										
Surface	209	202	241	258	273	253	284	360	380	319
Underground	816	833	895	900	777	867	1,000	1,046	942	714
Total	1,025	1,035	1,136	1,158	1,050	1,120	1,284	1,406	1,322	1,033
Days' Work Done										
Surface	46,079	46,721	57,118	60,723	66,677	50,433	75,828	94,393	97,753	77,950
Underground	210,129	190,463	207,811	208,134	190,000	184,959	254,650	291,284	254,908	193,022
Total	256,208	237,184	264,929	268,857	256,677	235,392	330,478	385,677	352,661	270,972
Average No. of days worked per man per year:										
Surface	220	231	237	235	244	199	267	262	257	244
Underground	258	229	232	231	245	213	255	270	271	269
By All Wage Earners	250	229	231	232	244[1]	210[1]	257	274	267	262
Total Wages Paid	$ 861,408	$ 678,844	$ 729,600	768,025	756,883	742,884	1,005,509	1,223,177	1,251,207	1,143,562

Source: Coal Statistics for Canada, 1937, 1942.

1. Strike loss was 90 days in these two years.

TABLE NO. 3

Relationship between Salaries and Wages Paid by the New Brunswick Coal Mining Industry and Total Salaries and Wages Paid by All New Brunswick Employers, 1933 - 1938

Year	Salaries and Wages Paid in N. B. Coal Industry[1]	Total Salaries and Wages Paid by All Employers in N.B.[2]	% Coal Wages to Total
	$000	$000	%
1933	861	52,437	1.6
1934	679	55,363	1.2
1935	730	60,592	1.2
1936	768	63,401	1.2
1937	757	69,557	1.1
1938	743	69,178	1.1

1. Source: Coal Statistics for Canada, 1937, 1942 (Dominion Bureau of Statistics, Ottawa).

2. Data provided by the Dominion Bureau of Statistics. See also Report of the N. B. Committee on Reconstruction (1944), at p. 103.

TABLE NO. 4

Comparative Figures on Employment and Payrolls in the Coal Mining and Major Manufacturing Industries in New Brunswick, 1941

Industry	Total Salaries and Wages	Number of Employees	Average Pay per Capita
	$000		$
Coal mining	1,251	1,322	946
Pulp and paper	4,867	2,914	1,670
Sawmills	2,618	3,763	695
Cotton yarn and cloth	1,152	1,167	987
Heating and cooking apparatus	711	582	1,222
Planing mills, sash and door factories	649	652	995
Fish curing and packing	607	1,043	582
Biscuits, confectionery, etc.	598	728	821
Bakery products	506	583	868
Meat packing	318	245	1,298
Butter and cheese factories	281	312	901
Boots and shoes	202	250	808

Source: Manufacturing data taken from Manufacturing Industries of the Maritime Provinces, 1941, Dominion Bureau of Statistics, Ottawa.

TABLE NO. 5

Capital Employed in the Coal Mines of New Brunswick
1936 - 1942

Year	Land, Buildings, Machinery and Tools	Supplies and Stock on Hand	Cash, Trading and Operating Accounts and Bills Receivable	Total
	$	$	$	$
1936	1,026,542	68,517	275,622	1,370,681
1937	935,121	32,419	341,229	1,308,769
1938	628,675	33,159	217,532	879,366
1939	776,612	37,874	392,420	1,206,906
1940	932,347	36,360	494,612	1,463,319
1941	894,214	57,566	526,292	1,478,072
1942	849,793	46,722	489,914	1,386,429

Source: Coal Statistics for Canada, 1937 - 1942, Dominion Bureau of Statistics.

TABLE NO. 6

Amount of Fixed Capital[1] Investment per
Ton of Coal Mined in Canada, by
Provinces, 1936 - 1942

Province	1936	1937	1938	1939	1940	1941	1942
	$	$	$	$	$	$	$
New Brunswick	2.78	2.56	1.84	1.66	1.70	1.71	1.95
Nova Scotia	5.56	5.73	5.76	4.71	4.06	4.47	4.42
Saskatchewan	2.55	2.57	2.69	3.90	2.71	2.25	2.09
Alberta	5.52	5.56	5.71	5.40	4.39	4.17	3.73
British Columbia	10.72	14.11	16.07	11.51	10.41	9.55	9.24

Source: Compiled from data in Coal Statistics for Canada, 1937 - 1942.

1. Fixed capital includes land, buildings, machinery and tools.

TABLE NO. 7

Output and Value of Coal Produced from New Brunswick Mines, 1889 - 1944

Year	Output (Short Tons)	Value[2]	Average Value Per Ton
1889-1893 (average)	6,235	11,165	1.79
1894-1898 (average)	7,126	10,801	1.52
1899-1903 (average)	14,591	32,466	2.22
1904-1908 (average)	33,434	71,598	2.14
1909-1913 (average)	55,071	115,433	2.10
1914-1918 (average)	165,257	595,287	3.62
1919	166,377	735,386	4.42
1920	171,610	1,091,440	6.36
1921	187,192	920,666	4.92
1922	287,513	1,107,643	3.85
1923	276,617	1,196,772	4.32
1924	217,121	932,185	4.29
1925	208,012	815,367	3.92
1926	173,111	710,245	4.10
1927	203,950	885,038	4.34
1928	207,738	869,104	4.11
1929	218,706	909,169	4.16
1930	209,349	864,118	4.13
1931	182,181	743,196	4.08
1932	212,695	794,168	3.73
1933	312,303	1,041,744	3.33
1934	314,750	1,026,343	3.26
1935	346,024	1,129,019	3.26
1936	368,618	1,190,032	3.23
1937	364,714	1,180,611	3.24
1938	342,238	1,133,346	3.31
1939	468,421	1,566,359	3.34
1940	547,064	1,961,863	3.59
1941	523,344	2,021,394	3.86
1942	435,203	1,826,403	4.20
1943[1]	372,873	1,641,069	4.40
1944[1]	347,032	1,862,829	5.37

Source: Compiled from Coal Statistics for Canada, 1942, (Dominion Bureau of Statistics, Ottawa) p. 47

1. 1943 and 1944 figures taken from Preliminary Estimate of Canada's Mineral Production for the Calendar Year 1944 (D.B.S., Jan. 2, 1945), and are subject to revision.
2. Value f.o.b. mines.

TABLE NO. 8

Output of Coal from New Brunswick Mines, by Months, 1934 - 1944
(Short Tons)

Month	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
January	29,549	35,198	36,836	40,359	25,855	37,337	47,234	44,138	39,918	31,027	27,167
February	30,219	34,736	39,476	41,362	29,320	42,934	45,518	46,245	36,449	31,017	26,680
March	31,742	37,805	25,089	44,070	37,714	46,164	44,762	49,662	36,389	29,635	30,450
April	19,570	23,298	30,269	34,325	27,487	36,362	41,968	38,858	32,384	29,630	25,617
May	24,622	26,229	27,571	27,896	21,497	36,315	46,586	47,845	35,079	30,996	23,187
June	17,136	22,299	23,585	36,599	24,249	39,827	43,511	44,048	38,664	30,921	26,439
July	23,124	22,069	26,110	32,528	20,056	35,233	45,311	45,755	37,132	33,466	37,836
August	24,984	26,448	22,981	31,260	21,603	34,523	48,180	44,283	42,440	31,179	26,532
September	27,142	22,561	28,843	32,722	26,860	36,827	40,361	42,068	36,976	36,791	32,766
October	26,500	32,605	32,856	17,539	30,028	40,090	52,017	45,067	37,254	30,784	32,137
November	30,664	27,240	36,325	12,172	38,601	43,092	49,252	35,672	32,884	29,316	31,298
December	29,498	35,536	38,677	13,882	38,968	39,717	42,364	39,703	29,634	29,006	
Total	314,750	346,024	368,618	364,714	342,238	468,421	547,064	523,344	435,203	373,166	

TABLE NO. 9

Ratio of Stripping to Total Coal Produced from the Minto Coal Field, 1935 - 1943 (Net Tons)

Year[1]	Total Output	Tonnage Stripped	Percentage Stripped
			%
1935	337,887	15,493	4.6
1936	347,988	21,856	6.2
1937	399,186	35,188	8.8
1938	290,388	39,892	13.7
1939	464,112	71,169	15.3
1940	530,469	86,750	16.4
1941	532,449	112,922	21.2
1942	445,329	107,159	24.1
1943	368,554	96,853	26.3
1944	334,490	91,518	27.3

Figures provided by the N. B. Department of Lands and Mines.

1. Note: these figures are for the fiscal year, Nov.1 - Oct.31, and differ, therefore, from calendar year figures presented elsewhere.

TABLE NO. 10

Average Output of Coal per Man-Day in New Brunswick and Other Coal Mining Provinces, 1936 - 1942

Province	Average Output per Man-Day in Short Tons						
	1936	1937	1938	1939	1940	1941	1942
New Brunswick	1.371	1.420	1.454	1.417	1.418	1.484	1.606
Nova Scotia	2.276	2.211	2.244	2.343	2.305	2.049	2.080
Manitoba	1.254	1.446	1.509	1.224	2.170	1.546	1.684
Saskatchewan	5.231	5.226	5.242	5.853	7.202	8.347	7.865
Alberta:							
Bituminous	3.529	3.479	3.556	3.745	3.890	3.786	3.629
Sub-Bituminous	3.464	3.409	3.346	3.608	3.762	4.049	3.505
Lignite	3.265	3.426	3.529	3.436	3.514	3.588	3.649
British Columbia	2.171	2.156	2.224	2.430	2.608	3.036	2.998
Canada	2.645	2.598	2.672	2.735	2.775	2.739	2.795

Source: Coal Statistics for Canada, 1937, 1939, 1941, 1942, Dominion Bureau of Statistics.

Note: As far as can be ascertained, employees under contract stripping in New Brunswick were not included in the above compilation, so that these data do not reflect the picture accurately.

TABLE NO. 11

Tonnage Lost in the Coal Mines of New Brunswick, Nova Scotia, Alberta and British Columbia, with Loss Analysis, 1936 - 1942.

Province	Year	Per Cent Produced	Per Cent Lost	Percentage Lost Through: Absentism	Lack of Orders	Car Shortage	Mine Disability	Other Causes
N.B.	1936	74	26	2.4	22.4	0.0	0.7	0.5
	1937	78	22	2.6	17.0	0.0	2.1	0.3
	1938	67	33	2.2	28.2	0.1	1.4	1.1
	1939	82	18	2.2	13.2	-	1.2	1.4
	1940	88	12	3.2	6.2	-	1.7	0.9
	1941	88	12	3.3	5.0	0.1	2.6	1.0
	1942	83	17	5.4	1.8	-	6.2	3.6
N.S.	1936	70	30	1.1	27.1	0.0	0.8	1.0
	1937	77	23	2.7	16.9	-	1.6	1.8
	1938	63	37	1.5	33.5	-	1.0	1.0
	1939	73	27	1.9	22.9	0.1	0.8	1.3
	1940	80	20	5.4	9.4	1.5	1.7	2.0
	1941	82	18	9.2	1.1	0.2	3.7	3.8
	1942	80	20	11.6	2.4	0.3	3.0	2.7
Alberta	1936	70	30	0.3	29.4	0.1	0.0	0.2
	1937	69	31	0.5	30.1	-	0.1	0.3
	1938	67	33	0.6	31.7	-	0.4	0.3
	1939	71	29	0.5	28.2	-	0.2	0.1
	1940	76	24	0.8	22.8	-	0.3	0.1
	1941	83	17	1.6	13.6	1.0	0.3	0.5
	1942	88	12	3.9	6.3	0.1	0.7	1.0
British Columbia	1936	81	19	0.1	17.9	0.3	0.0	0.7
	1937	82	18	0.2	16.8	0.1	-	0.9
	1938	74	26	0.1	25.5	-	0.3	0.1
	1939	79	21	0.3	19.9	0.2	0.1	0.5
	1940	85	15	0.1	14.0	0.7	-	0.2
	1941	88	12	-	9.2	1.9	0.1	0.8
	1942	93	7	3.1	0.7	0.1	0.3	2.8

Source: Coal Statistics for Canada, 1937 - 1942.

TABLE NO. 12

Relative Importance of the Various Grades of Coal Shipped from the New Brunswick Coal Mines

Grade	Per Cent of Total Output						
	1937	1938	1939	1940	1941	1942	1943
	%	%	%	%	%	%	%
Stripping[1]	11.6	9.3	11.4	18.3	18.0	6.8	7.2
Run-of-mine	26.8	32.3	27.5	22.2	26.0	38.0	41.7
Lump	38.6	37.4	36.3	39.1	34.9	31.3	27.4
Nut and other grades	0.8	1.5	1.5	1.0	0.8	0.5	0.8
Slack	22.2	19.5	23.3	19.4	20.3	23.4	22.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Compiled from Coal Statistics for Canada, 1937 - 1942.

1. Note: This does not represent the ratio of stripping output to total output. The ratios indicate the relationship of each grade of coal shipped to the total shipments. Some stripping coal is screened, and will therefore appear as lump or slack.

TABLE NO. 13

Comparative Coal Mine Operating Costs and Revenues Per Net Ton of Marketable Coal in New Brunswick, Nova Scotia and Canada, 1939, 1941 - 1943.

Operating Costs	1939			1941			1942			1943		
	N.B.	N.S.	Canada	N.B.	N.S.	Canada	N.B.	N.S.	Canada	N.B.	N.S.	Canada
	$	$	$	$	$	$	$	$	$	$	$	$
Distribution	.111	.536	.339	.116	.528	.294	.157	.513	.282	.13	.44	.24
Workmen's Compensation	.128	.107	.098	.131	.116	.105	.121	.115	.109	.13	.14	.15
Rent and Royalties	.120	.128	.107	.127	.130	.102	.102	.113	.093	.12	.12	.10
Insurance and Taxes	.044	.083	.077	.064	.068	.101	.189	.084	.118	.07	.11	.14
Administration & Miscl.	.252	.178	.179	.278	.199	.165	.340	.196	.158	.43	.26	.19
Bond & General Interest	.015	.058	.034	.014	.046	.024	.015	.066	.032	.04	.08	.03
Power	.081	.234	.194	.107	.240	.172	.096	.282	.185	.12	.32	.20
Depreciation & Depletion	.235	.216	.232	.244	.195	.215	.274	.187	.212	.33	.21	.24
Stores	.415	.420	.341	.376	.548	.402	.357	.553	.414	.39	.70	.47
Labour	2.025	2.246	1,877	2.626	2.613	2.029	2.857	2.888	2.180	3.29	3.40	2.40
Total	3.426	4.206	3.478	4.083	4.683	3.609	4.508	4.997	3.783	5.05	5.78	4.16
Revenues:												
Coal sold, used by company, and stock adjustments	3.390	4.193	3.434	3.971	4.352	3.461	4.421	4.760	3.669	4.50	4.90	3.75
Miscellaneous profits	.059	.063	.088	.095	.081	.091	.150	.124	.130	.40	.23	.22
Total	3.449	4.256	3.522	4.066	4.433	3.552	4.571	4.884	3.799	4.90	5.13	3.97
Profit or Loss	+.023	+.050	+.044	-.017	-.250	-.057	+.063	-.113	+.016	-.15	-.65	-.19
Value received per net ton of coal sold	3.405	4.294	3.513	4.170	4.445	3.518	4.411	4.829	3.690	4.56	5.02	3.88

Source: Data supplied by the Office of the Coal Controller, Ottawa.

TABLE NO. 14

Operating Costs and Revenues per Net Ton of Marketable Coal Produced in New Brunswick, 1933 - 1943

Year	Expenditures														Revenues			Net Profit or Loss
	Labour	Stores	Power	Insurance & Taxes	Rent & Royalties	Workmen's Compensation	Administration	Interest	Depreciation	Depletion	Miscl.	Cost f.o.b. cars	Distribution	Total Cost	Coal Sold	Other Revenues & Credits	Total Receipts	
	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$		$
1933	1.96	.26	.06	.05	.12	.12	.23	.04	.13	.08	.12	3.18	.18	3.36	3.33	.17	3.50	+ .14
1934	2.06	.34	.07	.04	.11	.13	.26	.04	.14	.08	.06	3.33	.11	3.44	3.30	.17	3.47	+ .03
1935	2.15	.35	.07	.03	.13	.14	.27	.04	.14	.08	.03	3.42	.12	3.54	3.28	.15	3.43	- .11
1936	2.01	.34	.09	.04	.14	.13	.24	.01	.20	.07	.04	3.30	.10	3.41	3.23	.15	3.38	- .03
1937	2.10	.39	.09	.05	.13	.13	.25	.01	.16	.08	.03	3.42	.10	3.52	3.32	.11	3.42	- .09
1938	2.20	.40	.11	.04	.14	.14	.29	.01	.12	.07	.05	3.57	.11	3.68	3.39	.13	3.52	- .16
1939	2.03	.42	.08	.04	.12	.13	.23	.02	.16	.08	.03	3.32	.11	3.43	3.35	.10	3.45	+ .02
1940	2.36	.38	.09	.08	.12	.13	.21	.06	.13	.08	.05	3.68	.11	3.79	3.68	.13	3.81	+ .02
1941	2.63	.38	.11	.07	.13	.13	.23	.01	.15	.10	.04	3.97	.12	4.08	3.91	.16	4.07	- .02
1942	2.85	.36	.10	.19	.10	.12	.29	.02	.16	.11	.05	4.35	.16	4.51	4.36	.21	4.57	+ .06
1943	3.30	.39	.12	.07	.12	.13	.34	.04	.24	.09	.09	4.92	.13	5.05	4.42	.48	4.90	- .15
% Change 1933-43	+68%	+50%	+100%	+40%	0	+8%	+43%	0	+85%	+13%	-25%	+54%	-28%	+50%	+33%	-42%	+40%	-
% Change 1939-43	+63%	- 7%	+50%	+75%	0	0	+43%	100%	+50%	+13%	+200%	+48%	+18%	+47%	+32%	+380%	+42%	-

Source: Figures supplied by the Office of the Coal Controller, Ottawa.

Note: Due to dropping a decimal place, there is a difference of 1 cent in the component figures for some years. The Total cost and revenue figures, and profit and loss figures are as provided by the Coal Controller.

TABLE NO. 15

Shipments of Coal in Short Tons from New Brunswick Mines, by Grades and Destination
1938 - 1943

Destination	1938							1939						
	Stripping Coal	Run-of-Mine	Lump	Nut and Other Grades	Slack	Total	% of Total	Stripping Coal	Run-of-Mine	Lump	Nut and Other Grades	Slack	Total	% of Total
							%							%
New Brunswick	14,647	61,196	17,568	3,864	47,311	144,586	43.3	21,799	87,273	13,827	5,525	78,199	206,623	44.7
Nova Scotia	- -	- -	126	-	- -	126	a	- -	- -	98	-	- -	98	a
Prince Edward Island	- -	121	1,171	40	- -	1,332	0.4	- -	90	996	49	142	1,227	0.3
Quebec	16,305	12,156	957	134	244	29,796	8.9	30,299	14,668	2,495	342	776	48,580	10.5
Ontario	284	- -	- -	-	- -	284	0.1	498	- -	- -	-	295	793	0.2
United States	- -	3,711	1,492	-	13,634	18,837	5.6	110	483	1,054	32	23,753	25,432	5.5
Canadian Railroads	- -	30,693	103,656	549	3,713	138,611	41.5	- -	24,259	148,982	1,143	4,446	178,830	38.7
Ships' Bunkers	- -	- -	385	197	- -	582	0.2	- -	- -	495	-	- -	495	0.1
Total	31,236	107,877	125,355	4,784	64,902	334,154	100.0	52,706	126,773	167,947	7,091	107,611	462,128	100.0

Compiled from Coal Statistics for Canada, 1938 - 1942, and from data provided by the Dominion Bureau of Statistics.

a. Less than 1/10 of 1 per cent.

TABLE NO. 15 (continued)

Shipments of Coal in Short Tons from New Brunswick Mines, by Grades and Destination
1938 - 1943

Destination	1940							1941						
	Stripping Coal	Run-of-Mine	Lump	Nut and Other Grades	Slack	Total	% of Total	Stripping Coal	Run-of-Mine	Lump	Nut and Other Grades	Slack	Total	% of Total
New Brunswick	52,112	88,005	25,872	3,371	81,952	251,312	% 47.0	64,050	99,906	19,762	2,620	74,392	260,730	% 50.9
Nova Scotia	- -	- -	232	-	- -	232	a	- -	- -	200	- -	- -	200	a
Prince Edward Island	- -	59	695	-	- -	754	0.1	327	- -	787	- -	- -	1,114	0.2
Quebec	41,552	8,481	1,963	874	875	53,745	10.1	27,614	7,749	1,360	1,116	1,911	39,750	7.8
Ontario	1,360	37	47	-	87	1,531	0.3	98	- -	111	- -	- -	209	a
United States	- -	4,468	672	-	21,046	26,186	4.9	- -	10,100	264	- -	27,318	37,682	7.4
Canadian Railroads	2,560	18,028	178,792	1,042	117	200,539	37.5	105	15,194	156,610	- -	244	172,153	33.6
Ships' Bunkers	- -	- -	399	-	- -	399	0.1	96	- -	243	- -	- -	339	0.1
Total	97,584	119,078	208,672	5,287	104,077	534,698	100.0	92,290	132,949	179,337	3,736	102,365	512,177	100.0

Compiled from Coal Statistics for Canada, 1938 - 1942, and from data provided by the Dominion Bureau of Statistics.

a. Less than 1/10 of 1 per cent.

TABLE NO. 15 (concluded)

Shipments of Coal in Short Tons from New Brunswick Mines, by Grades and Destination
1938 - 1943

Destination	1942							1943						
	Stripping Coal	Run-of-Mine	Lump	Nut and Other Grades	Slack	Total	% of Total	Stripping Coal	Run-of-Mine	Lump	Nut and Other Grades	Slack	Total	% of Total
							%							%
New Brunswick	25,242	138,782	12,709	1,877	73,090	251,700	59.0	13,691	138,024	8,006	3,140	60,649	223,510	61.4
Nova Scotia	- -	- -	- -	- -	- -	- -	-	- -	- -	- -	- -	- -	- -	-
Prince Edward Island	- -	- -	- -	- -	- -	- -	-	92	- -	126	- -	- -	218	0.1
Quebec	- -	3,921	917	250	1,296	6,384	1.5	- -	5,142	245	- -	527	5,914	1.6
Ontario	- -	- -	110	- -	- -	110	a	- -	- -	- -	- -	- -	- -	-
United States	- -	4,393	548	- -	24,934	29,875	7.0	1,933	5,074	562	- -	22,158	29,727	8.2
Canadian Railroads	4,094	15,231	119,106	160	216	138,807	32.5	10,484	3,490	90,514	- -	- -	104,488	28.7
Ships' Bunkers	- -	- -	- -	- -	- -	- -	-	- -	- -	- -	- -	- -	- -	-
Total	29,336	162,327	133,390	2,287	99,536	426,876	100.0	26,200	151,730	99,453	3,140	83,334	363,857	100.0

Compiled from Coal Statistics for Canada, 1938 - 1942, and from data provided by the Dominion Bureau of Statistics.

TABLE NO. 16

Tonnage and Cost of Canadian Coal Moved Under Assisted Rates, by Calendar Years, 1928 - 1943

Year	New Brunswick		Nova Scotia		Canada	
	Tons	Subvention	Tons	Subvention	Tons	Subvention
		$		$		$
1928	120	210	113,905	65,600	146,126	257,134
1929	231	330	304,276	205,270	341,622	418,737
1930	36	70	372,029	214,720	480,192	472,901
1931	239	162	401,597	225,137	732,916	613,524
1932	1,195	896	710,449	545,944	1,149,247	1,003,106
1933	1,163	981	1,384,268	1,280,223	1,855,716	1,735,407
1934	10,196	8,609	1,748,004	1,687,451	2,324,112	2,238,103
1935	14,325	10,544	1,588,302	1,489,412	2,182,477	2,058,388
1936	20,889	15,314	1,677,096	1,572,780	2,352,034	2,209,735
1937	41,083	32,363	1,908,821	1,785,792	2,637,345	2,449,588
1938	32,305	23,456	1,377,115	1,253,313	2,030,536	1,851,292
1939	54,165	45,664	2,420,694	2,988,404	3,403,581	4,092,399
1940	59,224	42,386	1,940,571	2,643,367	3,008,290	4,315,590
1941	43,783	31,226	2,015,829	2,188,365	3,318,968	4,489,229
1942	6,627	5,202	1,655,264	2,710,438	2,698,391	4,420,380
1943	5,268	4,293	803,892	2,310,513	1,091,887	2,533,084
Total	290,849	221,706	20,422,112	23,166,729	29,753,440	35158,591

Source: Data provided by the Coal Controller's Office, Ottawa.

TABLE NO. 17

Total and Domestic Sales of Five Leading New Brunswick Coal Operators, 1938 - 1944 (Short Tons)

Year	Domestic and Institutional Sales	% of Total	Total Sales
1938	15,259	7.3	202,966
1939	15,401	4.7	319,298
1940	19,660	5.4	367,687
1941	23,911	6.7	356,539
1942	20,009	6.2	322,681
1943	12,496	4.3	275,675
1944	10,061	4.0	251,701

TABLE NO. 18

Principal New Brunswick Markets for the Coal Sold by Six Leading N.B. Operators, 1938 - 1944. (Short Tons Sold)

Destination	1938	1939	1940	1941	1942	1943	1944
Bathurst	5,472	20,676	20,690	24,534	24,511	11,087	19,028
Chipman	3,000	3,081	3,700	1,000	1,000	- -	1,000
Dalhousie	21,046	78,331	74,661	67,037	62,738	70,513	52,924
Edmundston	15,185	20,137	15,412	16,073	27,241	33,230	30,686
Fredericton	2,760	2,809	2,273	1,978	4,583	2,514	2,538
Marysville	6,081	4,095	6,511	3,360	6,200	5,650	6,390
Moncton	200	200	300	2,882	3,939	- -	- -
Saint John-Fairville	15,657	14,495	17,295	14,829	11,037	11,649	8,598
Power Commission	16,686	23,000	32,227	30,308	31,292	31,745	48,882
C. N. R.	83,291	110,778	145,196	125,943	97,527	68,789	46,994
C. P. R.	22,891	32,973	26,499	25,455	27,427	20,818	19,559
Total	192,269	310,575	344,764	313,399	297,495	255,995	236,599
Total, All N.B. Sales	230,876	338,103	391,751	353,313	323,120	289,506	260,701

TABLE NO. 19

Summary of Coal Production, Exports, Imports, Inter-provincial Shipments and Coal Available for Consumption in New Brunswick, 1937 - 1942

	1937	1938	1939	1940	1941	1942
N. B. Production	364,714	342,238	468,421	547,064	523,344	435,203
Received from other provinces	627,725	534,549	579,619	749,290	1,102,524	1,178,448
Imported from:						
U. S. A.	34,120	24,364	39,504	29,971	51,616	34,579
Great Britain	87,213	73,348	65,249	77,179	53,250	58,075
Other Countries	4,927[1]	- -	- -	- -	- -	356[2]
Total Imports	126,260	97,712	104,753	107,150	104,866	93,010
Shipped to other provinces	44,131	31,538	50,748	56,262	41,273	6,494
Exported	84,942	79,665	110,581	109,797	133,838	102,085
Total available for consumption	989,626	863,296	991,464	1,237,445	1,555,623	1,598,082
Sales of Minto coal in N. B.	305,715	283,197	385,453	451,851	432,883	390,507
Ratio Minto sales to amount consumed	30.9%	32.8%	38.8%	36.5%	27.8%	24.5%
Ratio Minto production to amount consumed	36.8%	39.6%	47.2%	44.2%	33.6%	27.2%

Compiled from Coal Statistics for Canada, 1937 - 1942.

1. Germany

2. British India

TABLE NO. 20

Classification of Coal Received in New Brunswick from Other Provinces and Countries, 1937 - 1942

	1937	1938	1939	1940	1941	1942
Bituminous						
Nova Scotia[1]	627,725	534,549	579,619	749,290	1,102,524	1,173,448
United Kingdom	14,862	20,251	14,987	11,715	9,207	7,995
United States	13,768	8,001	13,957	8,337	32,462	2,352
Total Bituminous	656,355	562,801	608,563	769,342	1,144,193	1,189,1[illegible]1[3]
Anthracite						
United Kingdom	72,351	53,097	50,262	65,464	44,043	50,080
United States	20,352	16,363	25,547	21,634	19,154	32,227
Total Anthracite	97,630[2]	69,460	75,809	87,098	63,197	82,307
Total, All Coal Received from Outside the Province	749,058	632,261	684,372	856,440	1,207,390	1,271,4[illegible]8

Compiled from Coal Statistics for Canada, 1937 - 1942.

1. Of the coal received from Nova Scotia, the following amounts were for railways in New Brunswick:

1937	105,420
1938	110,303
1939	104,215
1940	157,626
1941	334,547
1942	336,326

2. Including 4,927 tons imported from Germany.

3. Including 356 tons imported from British India.

TABLE NO. 21

Comparative Freight Rates Applicable to Coal Moving from the Minto-Chipman District and from Nova Scotia to the Principal Coal Consuming Points in New Brunswick

Point of Destination	C.P.R. ex Minto			C.N.R. ex Hardwood Ridge			C.N.R. ex Chipman			C.N.R. ex Springhill Jct. N.S.			C.N.R. ex Sydney N.S.		
	Mileage	Rate	Rate per Ton Mile	Mileage	Rate	Rate per Ton Mile	Mileage	Rate	Rate per Ton Mile	Mileage	Rate	Rate per Ton Mile	Mileage	Rate	Rate per Ton Mile
		$	$		$	$		$	$		$	$		$	$
Bathurst Spur	(a)169	1.10	.0065	152	0.80	.0052	156	0.80	.0051	188	0.80	.0042	454	1.60	.0035
Campbellton	(a)234	1.50	.0067	217	1.20	.0055	222	1.20	.0054	253	1.20	.0047	518	1.80	.0035
Dalhousie	(a)231	1.30	.0056	215	1.00	.0047	218	1.00	.0046	250	1.10	.0044	516	1.80	.0035
Edmundston	199	1.10	.0055	166	1.10	.0066	174	1.10	.0063	297	1.20	.0040	563	2.00	.0035
Fairville	99	.90	.0091							157	.85	.0054	423	1.85	.0044
Fredericton	35	.95	.0271	66	1.10	.0167	71	1.10	.0155	198	1.50	.0076	464	2.30	.0049
Grand Falls	162	1.40	.0086	129	1.40	.0109	137	1.40	.0103	261	1.40	.0054	527	2.20	.0042
Marysville	33	.85	.0257	62	1.10	.0177	71	1.10	.0155	194	1.50	.0077	460	2.30	.0050
Saint John	101	.90	.0090		1.00			1.10		155	.85	.0055	421	1.85	.0044
St. Stephen-Milltown	131	1.50	.0114							273	1.90	.0069	539	2.90	.0054
Woodstock	96	1.50	.0156	129	1.50	.0116	138	1.50	.0108	261	1.80	.0069	527	2.50	.0047

(a) Combination mileage via Chipman.

APPENDIX B

LOCAL FREIGHT AND SHUNTING CHARGES WITHIN THE MINTO-CHIPMAN COAL FIELD.

Mining Section Point of Origin	Railway Main Line Destination	Freight Rate Per Ton
North Minto	C.N.R. Hardwood Ridge	10¢
South Minto	C.N.R. Chipman	30¢
Newcastle Bridge	C.N.R. Chipman	30¢
Chipman	C.N.R. Chipman	10¢
Coal Creek	C.N.R. Chipman	30¢
North Minto	C.P.R. Minto	5¢
South Minto	C.P.R. Minto	5¢
Newcastle Bridge	C.P.R. Minto	5¢
Chipman	C.P.R. Chipman	5¢
Coal Creek	C.P.R. Coal Creek	-
North Minto	Power Plant	30¢
South Minto	Power Plant	30¢
Newcastle Bridge	Power Plant	30¢
Chipman	Power Plant	65¢
Coal Creek	Power Plant	65¢

Rule 7 of the N. B. C. & Ry. Tariff No. 6, C. T. C. 194 reads as follows:

"Where railways perform switching service on private or industrial sidings beyond an area of 1,000 feet from the connecting switch, a charge of not less than $2.00 per car over and above the rate from the station will be assessed. For distances over 2 miles a charge of 50 cents per mile or part thereof, in addition to the $2.00 rate will be charged."